Computer algebra independent integration tests

4-Trig-functions/4.3-Tangent/4.3.0-a-trg-^m-b-tan-^n

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Contents

Chapter 1

Introduction

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

The number of integrals in this report is [387]. This is test number [98].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

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

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 100.00 (387)	% 0.00 (0)
Mathematica	% 99.74 (386)	% 0.26 (1)
Maple	% 68.22 (264)	% 31.78 (123)
Maxima	% 35.40 (137)	% 64.60 (250)
Fricas	% 39.53 (153)	% 60.47 (234)
Sympy	% 3.36 (13)	% 96.64 (374)
Giac	% 17.31 (67)	% 82.69 (320)
Mupad	% 31.52 (122)	% 68.48 (265)

Table 1.1: Percentage solved for each CAS

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

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

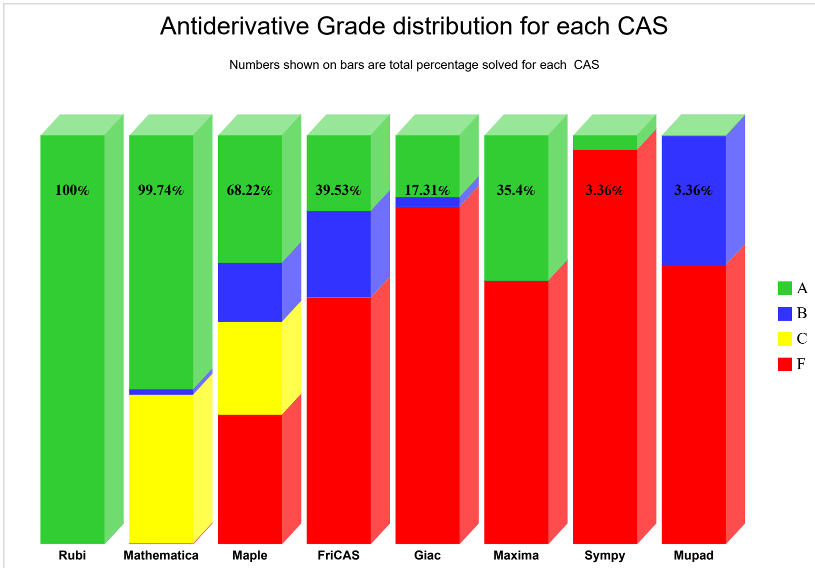
Table 1.2: Description of grading applied to integration result

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

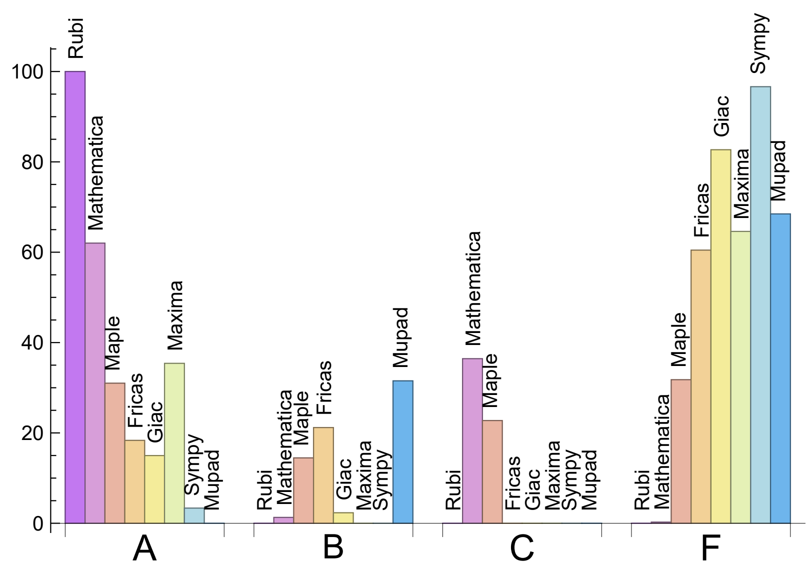
System	% A grade	% B grade	% C grade	% F grade
Rubi	100.00	0.00	0.00	0.00
Mathematica	62.02	1.29	36.43	0.26
Maple	31.01	14.47	22.74	31.78
Maxima	35.40	0.00	0.00	64.60
Fricas	18.35	21.19	0.00	60.47
Sympy	3.36	0.00	0.00	96.64
Giac	14.99	2.33	0.00	82.69
Mupad	0.00	31.52	0.00	68.48

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

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

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	0	0.00 %	0.00 %	0.00 %
Mathematica	1	100.00 %	0.00 %	0.00 %
Maple	123	97.56 %	2.44 %	0.00 %
Maxima	250	99.20 %	0.80 %	0.00 %
Fricas	234	87.61 %	2.56 %	9.83 %
Sympy	374	68.18 %	31.82 %	0.00 %
Giac	320	85.00 %	6.88 %	8.12 %
Mupad	265	100.00 %	0.00 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

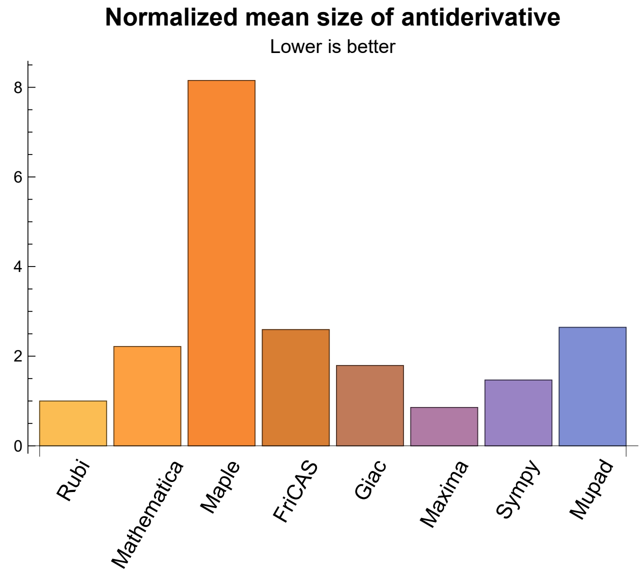
1.3 Performance

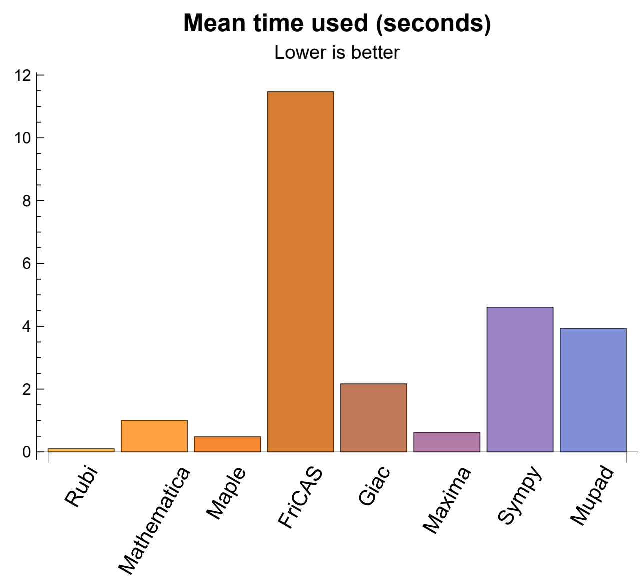
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.10	103.99	1.00	78.00	1.00
Mathematica	1.00	153.80	2.22	69.00	0.93
Maple	0.48	622.35	8.15	218.00	2.06
Maxima	0.62	115.38	0.86	133.00	0.85
Fricas	11.47	423.25	2.59	85.00	1.80
Sympy	4.61	41.54	1.47	44.00	1.19
Giac	2.17	147.75	1.79	81.00	1.05
Mupad	3.93	146.28	2.64	77.50	1.10

Table 1.5: Time and leaf size performance for each CAS

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





1.4 list of integrals that has no closed form antiderivative

{}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {174, 175, 176, 180, 181, 182, 183, 184, 185, 355, 356, 358, 359, 360, 367, 368, 372, 373, 387}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

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

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

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

  except Exception as ee:
         leafCount =1
```

1.9.4 Important note about Mupad results

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

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

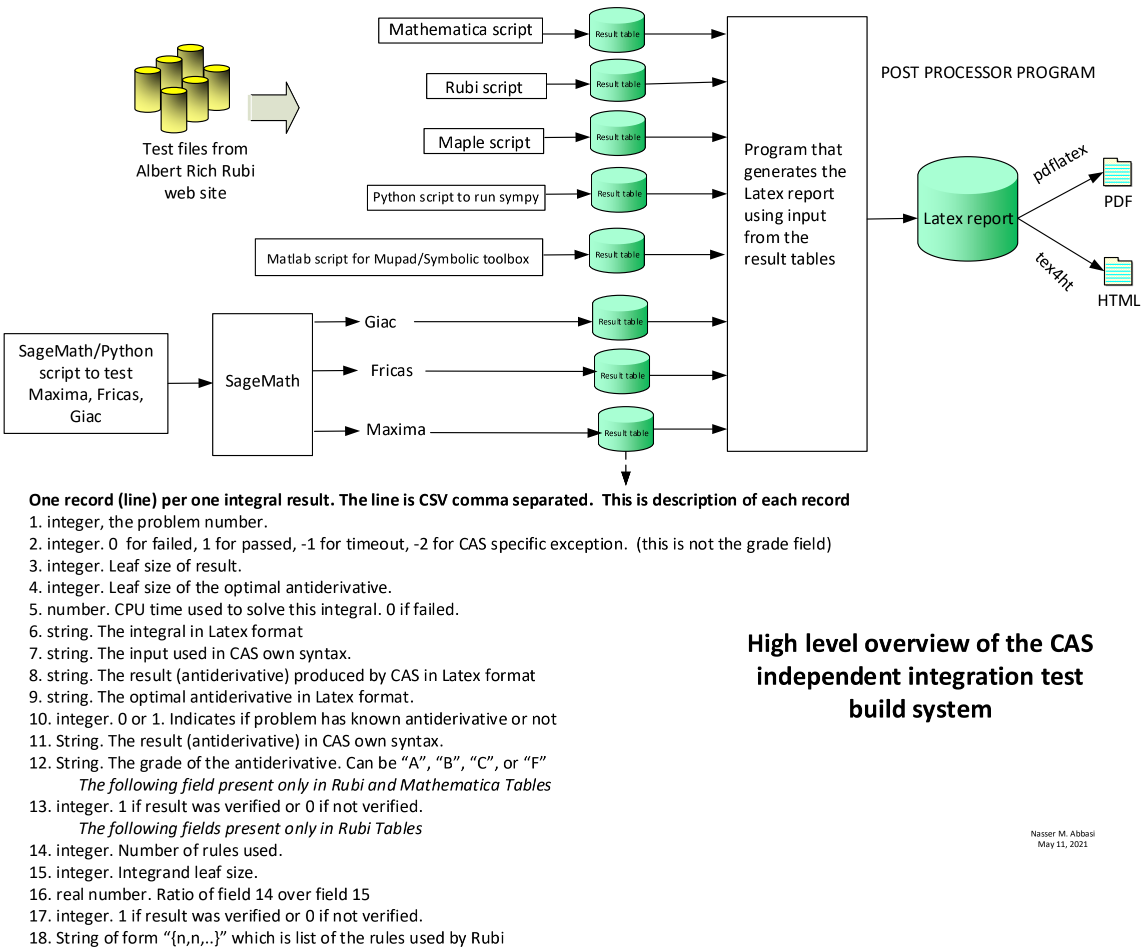
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

Which gives `sin(x)^2/2`

1.10 Design of the test system

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



Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387 }

B grade: { }

C grade: { }

F grade: { }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 20, 23, 24, 25, 26, 27, 28, 29, 30, 32, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 64, 65, 66, 67, 68, 73, 74, 75, 76, 77, 84, 85, 86, 87, 88, 94, 95, 96, 97, 98, 103, 104, 105, 106, 107, 114, 115, 116, 117, 118, 119, 121, 123, 125, 127, 129, 131, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 177, 178, 179, 182, 186, 187, 188, 189, 190, 194, 196, 198, 202, 204, 206, 210, 212, 217, 219, 221, 222, 223, 224, 225, 226, 227, 228, 230, 236, 237, 238, 239, 240, 247, 248, 249, 251, 252, 258, 259, 260, 262, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 293, 295, 297, 300, 306, 307, 309, 311, 313, 315, 317, 319, 321, 322, 324, 326, 328, 330, 332, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 357, 362, 363, 364, 365, 366, 369, 370, 371, 374, 375, 376, 377, 378, 380, 382, 383, 384, 385, 386 }

B grade: { 173, 304, 354, 379, 381 }

C grade: { 10, 12, 14, 15, 16, 17, 18, 19, 21, 22, 31, 33, 34, 35, 39, 40, 41, 59, 60, 61, 62, 63, 69, 70, 71, 72, 78, 79, 80, 81, 82, 83, 89, 90, 91, 92, 93, 99, 100, 101, 102, 108, 109, 110, 111, 112, 113, 120, 122, 124, 126, 128, 130, 132, 174, 175, 176, 180, 181, 183, 184, 185, 191, 192, 193, 195, 197, 199, 200, 201, 203, 205, 207, 208, 209, 211, 213, 214, 215, 216, 218, 220, 229, 231, 232, 233, 234, 235, 241, 242, 243, 244, 245, 246, 250, 253, 254, 255, 256, 257, 261, 263, 264, 265, 266, 267, 268, 269, 270, 292, 294, 296, 298, 299, 301, 302, 303, 305, 308, 310, 312, 314, 316, 318, 320, 323, 325, 327, 329, 331, 333, 355, 356, 358, 359, 360, 367, 368, 372, 373, 387 }

F grade: { 361 }

2.1.3 Maple

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 57, 58, 59, 67, 68, 76, 77, 78, 79, 87, 88, 97, 98, 99, 106, 107, 125, 127, 129, 131, 134, 135, 136, 137, 163, 195, 196, 197, 198, 204, 205, 206, 210, 211, 212, 213, 216, 217, 218, 219, 220, 221, 226, 227, 228, 229, 236, 237, 238, 239, 241, 242, 243, 245, 246, 247, 248, 249, 250, 253, 257, 258, 259, 260, 261, 295, 297, 304, 306, 313, 319, 321, 324, 326, 330, 332, 334, 353, 365, 376 }

B grade: { 56, 60, 61, 62, 63, 66, 69, 70, 71, 72, 75, 80, 81, 82, 83, 86, 89, 90, 91, 92, 93, 96, 100, 101, 102, 105, 108, 109, 110, 111, 112, 113, 114, 116, 118, 121, 123, 133, 138, 231, 232, 233, 234, 235, 244, 254, 255, 256, 263, 264, 265, 266, 267, 268, 269, 270 }

C grade: { 54, 55, 64, 65, 73, 74, 84, 85, 94, 95, 103, 104, 115, 117, 119, 120, 122, 124, 126, 128, 130, 132, 139, 140, 141, 142, 143, 144, 164, 165, 177, 178, 179, 191, 192, 193, 194, 199, 200, 201, 202, 203, 207, 208, 209, 214, 215, 230, 240, 251, 252, 262, 291, 292, 293, 294, 296, 298, 299, 300, 301, 302, 303, 305, 307, 308, 309, 310, 311, 312, 314, 315, 316, 317, 318, 320, 322, 323, 325, 327, 328, 329, 331, 333, 351, 352, 377, 378 }

F grade: { 23, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 222, 223, 224, 225, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 379, 380, 381, 382, 383, 384, 385, 386, 387 }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 54, 55, 56, 57, 58, 64, 65, 66, 67, 68, 73, 74, 75, 76, 77, 84, 85, 86, 87, 88, 94, 95, 96, 97, 98, 103, 104, 105, 106, 107, 163, 164, 165, 177, 178, 179, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 226, 227, 228, 229, 230, 236, 237, 238, 239, 240, 247, 248, 249, 250, 251, 252, 258, 259, 260, 261, 262, 351, 352, 353, 363, 364, 365, 376, 377, 378 }

B grade: { }

C grade: { }

F grade: { 23, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 59, 60, 61, 62, 63, 69, 70, 71, 72, 78, 79, 80, 81, 82, 83, 89, 90, 91, 92, 93, 99, 100, 101, 102, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 222, 223, 224, 225, 231, 232, 233, 234, 235, 241, 242, 243, 244, 245, 246, 253, 254, 255, 256, 257, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 354, 355, 356, 357, 358, 359, 360, 361, 362, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 379, 380, 381, 382, 383, 384, 385, 386, 387 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 19, 20, 24, 25, 26, 27, 28, 29, 36, 37, 38, 39, 40, 41, 52, 57, 58, 66, 67, 68, 76, 77, 87, 88, 114, 116, 121, 123, 127, 134, 135, 163, 164, 165, 177, 178, 179, 226, 227, 236, 237, 247, 248, 258, 259, 295, 297, 306, 319, 321, 324, 326, 332, 334, 351, 352, 353, 363, 364, 365, 376, 377, 378 }

B grade: { 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 54, 55, 56, 64, 65, 73, 74, 75, 84, 85, 86, 94, 95, 96, 97, 98, 103, 104, 105, 106, 107, 118, 125, 129, 131, 133, 136, 137, 138, 191, 192, 193, 194, 199, 200, 201, 202, 203, 207, 208, 209, 214, 215, 228, 229, 230, 238, 239, 240, 249, 250, 251, 252, 260, 261, 262, 291, 293, 300, 302, 304, 307, 309, 311, 313, 315, 317, 322, 328, 330 }

C grade: { }

F grade: { 23, 30, 31, 32, 33, 34, 35, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 59, 60, 61, 62, 63, 69, 70, 71, 72, 78, 79, 80, 81, 82, 83, 89, 90, 91, 92, 93, 99, 100, 101, 102, 108, 109, 110, 111, 112, 113, 115, 117, 119, 120, 122, 124, 126, 128, 130, 132, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 195, 196, 197, 198, 204, 205, 206, 210, 211, 212, 213, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 231, 232, 233, 234, 235, 241, 242, 243, 244, 245, 246, 253, 254, 255, 256, 257, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 292, 294, 296, 298, 299, 301, 303, 305, 308, 310, 312, 314, 316, 318, 320, 323, 325, 327, 329, 331, 333, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 354, 355, 356, 357, 358, 359, 360, 361, 362, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 379, 380, 381, 382, 383, 384, 385, 386, 387 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 295, 319, 324, 353, 376 }

B grade: { }

C grade: { }

F grade: { 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 320, 321, 322, 323, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387 }

2.1.7 Giac

A grade: { 1, 12, 13, 26, 39, 40, 41, 54, 55, 56, 57, 58, 64, 65, 66, 67, 68, 73, 74, 75, 76, 77, 84, 85, 86, 87, 88, 94, 95, 96, 97, 98, 103, 104, 105, 106, 107, 163, 226, 227, 228, 229, 230, 236, 237, 238, 240, 247, 248, 249, 250, 251, 252, 258, 259, 260, 262, 376 }

B grade: { 3, 5, 7, 24, 25, 27, 28, 29, 52 }

C grade: { }

F grade: { 2, 4, 6, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 30, 31, 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 59, 60, 61, 62, 63, 69, 70, 71, 72, 78, 79, 80, 81, 82, 83, 89, 90, 91, 92, 93, 99, 100, 101, 102, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 231, 232, 233, 234, 235, 239, 241, 242, 243, 244, 245, 246, 253, 254, 255, 256, 257, 261, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387 }

2.1.8 Mupad

A grade: { }

B grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 27, 56, 57, 58, 66, 67, 68, 75, 76, 77, 86, 87, 88, 96, 97, 98, 105, 106, 107, 114, 116, 121, 123, 127, 129, 134, 135, 136, 163, 164, 165, 177, 178, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 226, 227, 228, 229, 236, 237, 238, 239, 247, 248, 249, 250, 258, 259, 260, 261, 295, 297, 304, 306, 313, 319, 321, 324, 326, 330, 332, 334, 351, 352, 353, 364, 365, 376, 377, 378 }

C grade: { }

F grade: { 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 59, 60, 61, 62, 63, 64, 65, 69, 70, 71, 72, 73, 74, 78, 79, 80, 81, 82, 83, 84, 85, 89, 90, 91, 92, 93, 94, 95, 99, 100, 101, 102, 103, 104, 108, 109, 110, 111, 112, 113, 115, 117, 118, 119, 120, 122, 124, 125, 126, 128, 130, 131, 132, 133, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 222, 223, 224, 225, 230, 231, 232, 233, 234, 235, 240, 241, 242, 243, 244, 245, 246, 251, 252, 253, 254, 255, 256, 257, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 296, 298, 299, 300, 301, 302, 303, 305, 307, 308, 309, 310, 311, 312, 314, 315, 316, 317, 318, 320, 322, 323, 325, 327, 328, 329, 331, 333, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 379, 380, 381, 382, 383, 384, 385, 386, 387 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	17	11	18	19	13	16
normalized size	1	1.00	1.00	1.42	0.92	1.50	1.58	1.08	1.33
time (sec)	N/A	0.004	0.007	0.010	0.431	1.401	0.109	0.381	2.570

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	23	24	18	17	15	0	14
normalized size	1	1.00	1.64	1.71	1.29	1.21	1.07	0.00	1.00
time (sec)	N/A	0.008	0.007	0.010	0.423	1.346	0.135	0.000	2.506

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	25	31	31	27	32	246	30
normalized size	1	1.00	0.93	1.15	1.15	1.00	1.19	9.11	1.11
time (sec)	N/A	0.011	0.025	0.010	0.606	1.373	0.176	1.516	2.505

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	38	35	29	26	27	0	24
normalized size	1	1.00	1.36	1.25	1.04	0.93	0.96	0.00	0.86
time (sec)	N/A	0.015	0.011	0.010	0.718	0.599	0.215	0.000	2.503

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	37	44	54	39	44	512	38
normalized size	1	1.00	0.86	1.02	1.26	0.91	1.02	11.91	0.88
time (sec)	N/A	0.020	0.048	0.010	0.482	0.552	0.344	6.281	2.503

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	53	50	41	38	39	0	35
normalized size	1	1.00	1.20	1.14	0.93	0.86	0.89	0.00	0.80
time (sec)	N/A	0.025	0.016	0.011	0.551	0.563	0.463	0.000	2.532

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	47	57	74	51	56	810	49
normalized size	1	1.00	0.82	1.00	1.30	0.89	0.98	14.21	0.86
time (sec)	N/A	0.027	0.106	0.010	0.500	0.593	0.675	38.703	2.493

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	68	61	51	48	51	0	44
normalized size	1	1.00	1.17	1.05	0.88	0.83	0.88	0.00	0.76
time (sec)	N/A	0.030	0.012	0.010	0.630	0.625	0.922	0.000	2.521

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	175	200	186	600	0	0	93
normalized size	1	1.00	0.75	0.86	0.80	2.59	0.00	0.00	0.40
time (sec)	N/A	0.196	0.385	0.069	0.804	0.567	0.000	0.000	3.177

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	40	182	176	594	0	0	74
normalized size	1	1.00	0.19	0.86	0.83	2.80	0.00	0.00	0.35
time (sec)	N/A	0.145	0.072	0.057	0.658	0.642	0.000	0.000	2.791

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	159	176	170	533	0	0	73
normalized size	1	1.00	0.76	0.84	0.81	2.54	0.00	0.00	0.35
time (sec)	N/A	0.151	0.170	0.064	0.571	1.390	0.000	0.000	2.738

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	40	160	153	519	0	176	49
normalized size	1	1.00	0.21	0.83	0.80	2.70	0.00	0.92	0.26
time (sec)	N/A	0.121	0.044	0.070	0.427	0.676	0.000	0.519	2.625

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	131	166	155	493	0	184	59
normalized size	1	1.00	0.68	0.86	0.81	2.57	0.00	0.96	0.31
time (sec)	N/A	0.121	0.109	0.078	0.685	1.008	0.000	0.539	2.724

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	38	184	167	652	0	0	76
normalized size	1	1.00	0.18	0.87	0.79	3.08	0.00	0.00	0.36
time (sec)	N/A	0.146	0.067	0.062	0.586	0.656	0.000	0.000	2.728

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	40	184	168	653	0	0	75
normalized size	1	1.00	0.19	0.86	0.79	3.05	0.00	0.00	0.35
time (sec)	N/A	0.150	0.090	0.062	0.728	0.809	0.000	0.000	3.068

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	40	202	195	751	0	0	92
normalized size	1	1.00	0.17	0.86	0.83	3.21	0.00	0.00	0.39
time (sec)	N/A	0.181	0.108	0.066	0.609	1.018	0.000	0.000	3.115

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	38	215	185	588	0	0	247
normalized size	1	1.00	0.16	0.88	0.76	2.42	0.00	0.00	1.02
time (sec)	N/A	0.418	0.027	0.143	0.662	1.198	0.000	0.000	3.076

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	40	202	168	583	0	0	259
normalized size	1	1.00	0.18	0.90	0.75	2.60	0.00	0.00	1.16
time (sec)	N/A	0.394	0.050	0.121	0.481	0.566	0.000	0.000	2.950

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	40	114	98	124	0	0	146
normalized size	1	1.00	0.31	0.87	0.75	0.95	0.00	0.00	1.11
time (sec)	N/A	0.104	0.043	0.054	0.803	0.484	0.000	0.000	2.632

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	100	114	99	299	0	0	128
normalized size	1	1.00	0.76	0.87	0.76	2.28	0.00	0.00	0.98
time (sec)	N/A	0.100	0.143	0.053	0.774	0.690	0.000	0.000	2.732

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	38	208	170	548	0	0	230
normalized size	1	1.00	0.17	0.93	0.76	2.45	0.00	0.00	1.03
time (sec)	N/A	0.326	0.029	0.119	0.826	0.915	0.000	0.000	2.703

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	38	227	182	701	0	0	278
normalized size	1	1.00	0.16	0.93	0.74	2.86	0.00	0.00	1.13
time (sec)	N/A	0.436	0.062	0.119	0.729	0.615	0.000	0.000	2.548

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	53	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.028	0.042	0.675	0.000	0.670	0.000	0.000	0.000

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	56	58	47	74	0	696	-1
normalized size	1	1.00	0.57	0.59	0.48	0.76	0.00	7.10	-0.01
time (sec)	N/A	0.042	0.376	0.153	0.783	0.628	0.000	5.706	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	47	48	34	52	0	256	-1
normalized size	1	1.00	0.77	0.79	0.56	0.85	0.00	4.20	-0.02
time (sec)	N/A	0.028	0.110	0.115	0.592	0.568	0.000	1.850	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	37	19	38	0	23	-1
normalized size	1	1.00	1.00	1.16	0.59	1.19	0.00	0.72	-0.03
time (sec)	N/A	0.017	0.041	0.138	0.574	1.365	0.000	0.532	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	39	47	33	50	0	81	34
normalized size	1	1.00	1.26	1.52	1.06	1.61	0.00	2.61	1.10
time (sec)	N/A	0.016	0.087	0.158	0.837	1.338	0.000	0.505	2.446

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	56	64	46	69	0	208	-1
normalized size	1	1.00	0.85	0.97	0.70	1.05	0.00	3.15	-0.02
time (sec)	N/A	0.029	0.386	0.151	0.483	0.826	0.000	3.429	0.000

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	68	74	66	82	0	271	-1
normalized size	1	1.00	0.70	0.76	0.68	0.85	0.00	2.79	-0.01
time (sec)	N/A	0.040	0.271	0.147	0.592	0.611	0.000	5.273	0.000

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	364	199	266	178	0	0	0	-1
normalized size	1	1.00	0.55	0.73	0.49	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.150	0.840	0.124	0.970	0.000	0.000	0.000	0.000

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	286	54	236	140	0	0	0	-1
normalized size	1	1.00	0.19	0.83	0.49	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.126	0.062	0.079	0.626	0.000	0.000	0.000	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	161	208	133	0	0	0	-1
normalized size	1	1.00	0.63	0.82	0.52	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.113	0.254	0.103	0.659	0.000	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	43	211	126	0	0	0	-1
normalized size	1	1.00	0.17	0.83	0.49	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.118	0.035	0.118	0.535	0.000	0.000	0.000	0.000

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	45	236	163	0	0	0	-1
normalized size	1	1.00	0.15	0.79	0.55	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.130	0.071	0.101	0.633	0.000	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	364	45	272	172	0	0	0	-1
normalized size	1	1.00	0.12	0.75	0.47	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.151	0.057	0.109	0.813	0.000	0.000	0.000	0.000

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	86	84	79	96	0	0	-1
normalized size	1	1.00	0.47	0.46	0.43	0.53	0.00	0.00	-0.01
time (sec)	N/A	0.063	0.755	0.116	0.840	1.115	0.000	0.000	0.000

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	66	64	53	62	0	0	-1
normalized size	1	1.00	0.60	0.58	0.48	0.56	0.00	0.00	-0.01
time (sec)	N/A	0.043	0.772	0.074	0.501	1.139	0.000	0.000	0.000

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	41	42	26	37	0	0	-1
normalized size	1	1.00	0.82	0.84	0.52	0.74	0.00	0.00	-0.02
time (sec)	N/A	0.021	0.097	0.096	0.645	1.033	0.000	0.000	0.000

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	43	40	27	39	0	45	-1
normalized size	1	1.00	0.84	0.78	0.53	0.76	0.00	0.88	-0.02
time (sec)	N/A	0.022	0.052	0.122	0.687	0.937	0.000	0.714	0.000

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	45	63	50	62	0	124	-1
normalized size	1	1.00	0.38	0.53	0.42	0.52	0.00	1.04	-0.01
time (sec)	N/A	0.043	0.048	0.098	0.514	0.777	0.000	4.342	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	45	83	70	82	0	185	-1
normalized size	1	1.00	0.25	0.45	0.38	0.45	0.00	1.01	-0.01
time (sec)	N/A	0.064	0.036	0.105	0.952	0.799	0.000	8.357	0.000

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F(-1)	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	57	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.039	0.051	180.000	0.000	1.668	0.000	0.000	0.000

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	49	0	0	0	0	0	-1
normalized size	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.038	0.045	0.574	0.000	1.140	0.000	0.000	0.000

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	55	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.038	0.042	0.888	0.000	0.491	0.000	0.000	0.000

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	53	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.040	0.041	0.585	0.000	0.594	0.000	0.000	0.000

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	62	0	0	0	0	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.048	0.106	3.414	0.000	0.000	0.000	0.000	0.000

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	60	0	0	0	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.045	0.072	0.732	0.000	0.000	0.000	0.000	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	56	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.042	0.040	0.706	0.000	0.000	0.000	0.000	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	60	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.049	0.052	0.602	0.000	0.000	0.000	0.000	0.000

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	60	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.048	0.070	0.752	0.000	0.000	0.000	0.000	0.000

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	62	0	0	0	0	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.047	0.072	0.766	0.000	0.000	0.000	0.000	0.000

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F(-1)	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	0	0	23	0	152	-1
normalized size	1	1.00	1.00	0.00	0.00	0.72	0.00	4.75	-0.03
time (sec)	N/A	0.019	0.023	180.000	0.000	2.389	0.000	9.819	0.000

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F(-1)	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	59	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.045	0.053	180.000	0.000	0.666	0.000	0.000	0.000

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	122	542	225	1916	0	245	-1
normalized size	1	1.00	0.47	2.11	0.88	7.46	0.00	0.95	-0.00
time (sec)	N/A	0.196	0.241	0.586	0.755	168.979	0.000	1.411	0.000

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	104	516	194	1903	0	219	-1
normalized size	1	1.00	0.46	2.27	0.85	8.38	0.00	0.96	-0.00
time (sec)	N/A	0.161	0.181	0.482	0.636	113.859	0.000	0.989	0.000

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	38	23	37	0	16	48
normalized size	1	1.00	1.00	2.11	1.28	2.06	0.00	0.89	2.67
time (sec)	N/A	0.041	0.076	0.491	0.550	0.469	0.000	0.910	3.047

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	30	50	33	63	0	43	102
normalized size	1	1.00	0.73	1.22	0.80	1.54	0.00	1.05	2.49
time (sec)	N/A	0.045	0.129	0.587	0.529	0.532	0.000	0.690	6.532

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	50	60	48	82	0	58	356
normalized size	1	1.00	0.79	0.95	0.76	1.30	0.00	0.92	5.65
time (sec)	N/A	0.052	0.170	0.577	0.324	0.470	0.000	0.522	7.017

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	139	216	0	0	0	0	-1
normalized size	1	1.00	1.32	2.06	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.133	1.942	0.545	0.000	0.485	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	57	188	0	0	0	0	-1
normalized size	1	1.00	0.76	2.51	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.090	1.049	0.413	0.000	0.448	0.000	0.000	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	73	157	0	0	0	0	-1
normalized size	1	1.00	1.55	3.34	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.068	0.154	0.505	0.000	0.447	0.000	0.000	0.000

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	115	297	0	0	0	0	-1
normalized size	1	1.00	1.49	3.86	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.106	0.590	0.591	0.000	0.422	0.000	0.000	0.000

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	124	550	0	0	0	0	-1
normalized size	1	1.00	1.18	5.24	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.143	1.418	0.599	0.000	0.421	0.000	0.000	0.000

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	123	702	235	1580	0	252	-1
normalized size	1	1.00	0.44	2.53	0.85	5.70	0.00	0.91	-0.00
time (sec)	N/A	0.196	0.770	0.543	0.827	74.619	0.000	0.522	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	113	676	204	1568	0	226	-1
normalized size	1	1.00	0.46	2.74	0.83	6.35	0.00	0.91	-0.00
time (sec)	N/A	0.176	0.547	0.424	0.564	73.443	0.000	0.402	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	58	23	24	0	16	43
normalized size	1	1.00	1.00	3.22	1.28	1.33	0.00	0.89	2.39
time (sec)	N/A	0.043	0.055	0.500	0.685	0.428	0.000	1.373	2.765

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	30	50	34	51	0	43	100
normalized size	1	1.00	0.73	1.22	0.83	1.24	0.00	1.05	2.44
time (sec)	N/A	0.048	0.082	0.559	0.587	0.453	0.000	0.547	3.494

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	42	60	58	71	0	64	292
normalized size	1	1.00	0.67	0.95	0.92	1.13	0.00	1.02	4.63
time (sec)	N/A	0.055	0.145	0.592	0.468	0.493	0.000	0.596	5.877

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	90	540	0	0	0	0	-1
normalized size	1	1.00	0.82	4.91	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.141	0.605	0.466	0.000	0.495	0.000	0.000	0.000

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	58	526	0	0	0	0	-1
normalized size	1	1.00	0.76	6.92	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.087	0.291	0.426	0.000	0.501	0.000	0.000	0.000

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	61	511	0	0	0	0	-1
normalized size	1	1.00	0.80	6.72	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	0.291	0.487	0.000	0.414	0.000	0.000	0.000

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	71	491	0	0	0	0	-1
normalized size	1	1.00	0.70	4.81	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.587	0.573	0.000	0.462	0.000	0.000	0.000

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	142	590	240	1997	0	278	-1
normalized size	1	1.00	0.51	2.13	0.87	7.21	0.00	1.00	-0.00
time (sec)	N/A	0.194	0.580	0.509	0.592	114.519	0.000	3.288	0.000

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	126	564	209	1984	0	252	-1
normalized size	1	1.00	0.51	2.28	0.85	8.03	0.00	1.02	-0.00
time (sec)	N/A	0.175	0.406	0.411	0.832	111.832	0.000	0.499	0.000

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	38	23	40	0	24	56
normalized size	1	1.00	1.00	1.90	1.15	2.00	0.00	1.20	2.80
time (sec)	N/A	0.042	0.081	0.485	0.423	0.583	0.000	0.617	2.476

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	50	36	58	0	42	64
normalized size	1	1.00	0.78	1.22	0.88	1.41	0.00	1.02	1.56
time (sec)	N/A	0.048	0.114	0.503	0.571	0.589	0.000	0.541	2.721

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	42	60	56	82	0	70	134
normalized size	1	1.00	0.67	0.95	0.89	1.30	0.00	1.11	2.13
time (sec)	N/A	0.054	0.232	0.530	0.475	0.442	0.000	0.708	5.464

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	153	246	0	0	0	0	-1
normalized size	1	1.00	1.12	1.80	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.175	3.303	0.461	0.000	0.559	0.000	0.000	0.000

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	133	220	0	0	0	0	-1
normalized size	1	1.00	1.23	2.04	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.116	2.240	0.411	0.000	0.468	0.000	0.000	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	71	192	0	0	0	0	-1
normalized size	1	1.00	0.89	2.40	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.101	0.388	0.474	0.000	0.499	0.000	0.000	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	71	192	0	0	0	0	-1
normalized size	1	1.00	0.89	2.40	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.107	0.350	0.510	0.000	0.461	0.000	0.000	0.000

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	110	316	0	0	0	0	-1
normalized size	1	1.00	1.00	2.87	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.147	0.492	0.551	0.000	0.474	0.000	0.000	0.000

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	130	571	0	0	0	0	-1
normalized size	1	1.00	0.93	4.08	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.185	1.649	0.592	0.000	0.437	0.000	0.000	0.000

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	122	688	220	1456	0	246	-1
normalized size	1	1.00	0.47	2.68	0.86	5.67	0.00	0.96	-0.00
time (sec)	N/A	0.174	0.712	0.510	0.490	62.819	0.000	1.592	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	109	662	188	1442	0	218	-1
normalized size	1	1.00	0.48	2.92	0.83	6.35	0.00	0.96	-0.00
time (sec)	N/A	0.150	0.645	0.455	0.576	61.150	0.000	0.702	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	38	23	46	0	23	102
normalized size	1	1.00	1.00	1.90	1.15	2.30	0.00	1.15	5.10
time (sec)	N/A	0.036	0.101	0.549	0.513	0.573	0.000	0.794	3.326

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	40	50	35	70	0	45	530
normalized size	1	1.00	0.93	1.16	0.81	1.63	0.00	1.05	12.33
time (sec)	N/A	0.043	0.130	0.614	0.319	0.616	0.000	1.132	7.188

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	50	60	48	93	0	58	831
normalized size	1	1.00	0.77	0.92	0.74	1.43	0.00	0.89	12.78
time (sec)	N/A	0.049	0.159	0.678	0.321	0.749	0.000	1.441	12.397

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	86	550	0	0	0	0	-1
normalized size	1	1.00	0.80	5.14	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.133	0.873	0.536	0.000	0.716	0.000	0.000	0.000

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	98	537	0	0	0	0	-1
normalized size	1	1.00	1.24	6.80	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	0.760	0.522	0.000	0.835	0.000	0.000	0.000

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	60	523	0	0	0	0	-1
normalized size	1	1.00	1.28	11.13	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.057	0.127	0.434	0.000	0.705	0.000	0.000	0.000

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	69	482	0	0	0	0	-1
normalized size	1	1.00	0.96	6.69	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.097	0.319	0.552	0.000	0.671	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	104	972	0	0	0	0	-1
normalized size	1	1.00	1.02	9.53	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	0.683	0.618	0.000	0.548	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	123	550	225	1871	0	257	-1
normalized size	1	1.00	0.48	2.14	0.88	7.28	0.00	1.00	-0.00
time (sec)	N/A	0.182	0.350	0.483	0.650	103.508	0.000	1.439	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	105	522	193	1856	0	228	-1
normalized size	1	1.00	0.46	2.30	0.85	8.18	0.00	1.00	-0.00
time (sec)	N/A	0.158	0.254	0.463	0.839	104.131	0.000	1.022	0.000

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	38	23	58	0	26	381
normalized size	1	1.00	1.00	1.90	1.15	2.90	0.00	1.30	19.05
time (sec)	N/A	0.043	0.123	0.504	0.352	0.501	0.000	1.228	6.447

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	42	50	35	84	0	45	684
normalized size	1	1.00	0.98	1.16	0.81	1.95	0.00	1.05	15.91
time (sec)	N/A	0.050	0.093	0.576	0.446	0.487	0.000	1.926	8.149

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	54	60	48	109	0	58	987
normalized size	1	1.00	0.83	0.92	0.74	1.68	0.00	0.89	15.18
time (sec)	N/A	0.054	0.130	0.660	0.448	0.506	0.000	2.556	16.413

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	102	222	0	0	0	0	-1
normalized size	1	1.00	0.91	1.98	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.133	0.379	0.492	0.000	0.453	0.000	0.000	0.000

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	126	196	0	0	0	0	-1
normalized size	1	1.00	1.59	2.48	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	0.769	0.418	0.000	0.491	0.000	0.000	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	110	302	0	0	0	0	-1
normalized size	1	1.00	1.34	3.68	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.104	0.733	0.493	0.000	0.436	0.000	0.000	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	136	558	0	0	0	0	-1
normalized size	1	1.00	1.21	4.98	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.146	1.709	0.587	0.000	0.446	0.000	0.000	0.000

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	123	688	219	1558	0	248	-1
normalized size	1	1.00	0.48	2.68	0.85	6.06	0.00	0.96	-0.00
time (sec)	N/A	0.176	0.766	0.487	0.613	64.662	0.000	1.065	0.000

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	113	662	189	1545	0	220	-1
normalized size	1	1.00	0.50	2.92	0.83	6.81	0.00	0.97	-0.00
time (sec)	N/A	0.162	0.550	0.434	0.650	66.160	0.000	2.007	0.000

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	38	23	63	0	26	530
normalized size	1	1.00	1.00	1.90	1.15	3.15	0.00	1.30	26.50
time (sec)	N/A	0.043	0.165	0.528	0.479	0.486	0.000	2.864	7.397

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	50	50	35	91	0	45	831
normalized size	1	1.00	1.16	1.16	0.81	2.12	0.00	1.05	19.33
time (sec)	N/A	0.050	0.183	0.591	0.527	0.834	0.000	2.351	12.140

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	60	60	48	114	0	58	1132
normalized size	1	1.00	0.92	0.92	0.74	1.75	0.00	0.89	17.42
time (sec)	N/A	0.056	0.245	0.639	0.326	0.841	0.000	2.988	14.007

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	122	563	0	0	0	0	-1
normalized size	1	1.00	0.85	3.91	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.186	1.569	0.555	0.000	0.728	0.000	0.000	0.000

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	100	550	0	0	0	0	-1
normalized size	1	1.00	0.88	4.82	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.143	1.092	0.472	0.000	0.552	0.000	0.000	0.000

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	97	537	0	0	0	0	-1
normalized size	1	1.00	1.15	6.39	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.630	0.528	0.000	0.514	0.000	0.000	0.000

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	69	503	0	0	0	0	-1
normalized size	1	1.00	0.88	6.45	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.087	0.407	0.441	0.000	0.449	0.000	0.000	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	105	965	0	0	0	0	-1
normalized size	1	1.00	0.95	8.77	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.136	1.786	0.531	0.000	0.423	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	116	1455	0	0	0	0	-1
normalized size	1	1.00	0.83	10.39	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.184	0.839	0.614	0.000	0.460	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	51	493	0	65	0	0	80
normalized size	1	1.00	0.75	7.25	0.00	0.96	0.00	0.00	1.18
time (sec)	N/A	0.090	0.195	0.636	0.000	0.434	0.000	0.000	4.330

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	80	131	0	0	0	0	-1
normalized size	1	1.00	0.91	1.49	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.106	0.318	0.522	0.000	0.456	0.000	0.000	0.000

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	295	0	47	0	0	60
normalized size	1	1.00	1.00	9.83	0.00	1.57	0.00	0.00	2.00
time (sec)	N/A	0.042	0.128	0.548	0.000	0.549	0.000	0.000	2.898

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	60	88	0	0	0	0	-1
normalized size	1	1.00	1.20	1.76	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.053	0.118	0.427	0.000	0.571	0.000	0.000	0.000

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	72	185	0	413	0	0	-1
normalized size	1	1.00	0.67	1.73	0.00	3.86	0.00	0.00	-0.01
time (sec)	N/A	0.088	0.262	0.506	0.000	0.798	0.000	0.000	0.000

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	79	178	0	0	0	0	-1
normalized size	1	1.00	0.92	2.07	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.103	0.247	0.507	0.000	0.440	0.000	0.000	0.000

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	99	338	0	0	0	0	-1
normalized size	1	1.00	0.79	2.68	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.169	0.334	0.536	0.000	0.470	0.000	0.000	0.000

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	45	492	0	57	0	0	69
normalized size	1	1.00	0.66	7.24	0.00	0.84	0.00	0.00	1.01
time (sec)	N/A	0.105	0.168	0.498	0.000	0.423	0.000	0.000	3.731

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	83	326	0	0	0	0	-1
normalized size	1	1.00	0.99	3.88	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.101	0.205	0.521	0.000	0.447	0.000	0.000	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	308	0	45	0	0	39
normalized size	1	1.00	1.00	10.27	0.00	1.50	0.00	0.00	1.30
time (sec)	N/A	0.049	0.065	0.533	0.000	0.737	0.000	0.000	3.066

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	92	316	0	0	0	0	-1
normalized size	1	1.00	1.02	3.51	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.111	0.268	0.468	0.000	1.310	0.000	0.000	0.000

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	104	247	0	524	0	0	-1
normalized size	1	1.00	0.72	1.70	0.00	3.61	0.00	0.00	-0.01
time (sec)	N/A	0.150	0.364	0.507	0.000	1.289	0.000	0.000	0.000

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	100	349	0	0	0	0	-1
normalized size	1	1.00	0.81	2.84	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.162	0.525	0.584	0.000	0.802	0.000	0.000	0.000

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	52	60	0	71	0	0	88
normalized size	1	1.00	0.76	0.88	0.00	1.04	0.00	0.00	1.29
time (sec)	N/A	0.102	0.164	0.500	0.000	0.665	0.000	0.000	4.823

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	87	337	0	0	0	0	-1
normalized size	1	1.00	0.99	3.83	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.105	0.238	0.560	0.000	0.690	0.000	0.000	0.000

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	48	0	53	0	0	69
normalized size	1	1.00	1.00	1.50	0.00	1.66	0.00	0.00	2.16
time (sec)	N/A	0.049	0.138	0.466	0.000	0.616	0.000	0.000	3.634

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	69	327	0	0	0	0	-1
normalized size	1	1.00	1.38	6.54	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.051	0.153	0.532	0.000	0.647	0.000	0.000	0.000

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	80	177	0	419	0	0	-1
normalized size	1	1.00	0.75	1.67	0.00	3.95	0.00	0.00	-0.01
time (sec)	N/A	0.083	0.146	0.512	0.000	1.237	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	89	315	0	0	0	0	-1
normalized size	1	1.00	1.02	3.62	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.105	0.346	0.551	0.000	0.699	0.000	0.000	0.000

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	112	319	0	605	0	0	-1
normalized size	1	1.00	0.77	2.18	0.00	4.14	0.00	0.00	-0.01
time (sec)	N/A	0.142	0.628	0.575	0.000	0.987	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	67	70	0	84	0	0	296
normalized size	1	1.00	0.46	0.48	0.00	0.58	0.00	0.00	2.03
time (sec)	N/A	0.207	0.430	0.486	0.000	0.491	0.000	0.000	8.601

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	57	60	0	71	0	0	94
normalized size	1	1.00	0.52	0.55	0.00	0.65	0.00	0.00	0.86
time (sec)	N/A	0.151	0.221	0.465	0.000	0.592	0.000	0.000	5.480

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	45	48	0	55	0	0	81
normalized size	1	1.00	1.41	1.50	0.00	1.72	0.00	0.00	2.53
time (sec)	N/A	0.055	0.136	0.448	0.000	0.635	0.000	0.000	4.012

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	88	237	0	529	0	0	-1
normalized size	1	1.00	0.62	1.68	0.00	3.75	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.339	0.542	0.000	1.121	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	103	320	0	608	0	0	-1
normalized size	1	1.00	0.68	2.12	0.00	4.03	0.00	0.00	-0.01
time (sec)	N/A	0.155	0.346	0.514	0.000	0.969	0.000	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	118	181	0	0	0	0	-1
normalized size	1	1.00	0.71	1.08	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.227	0.767	0.581	0.000	0.459	0.000	0.000	0.000

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	97	161	0	0	0	0	-1
normalized size	1	1.00	0.75	1.24	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.167	0.369	0.521	0.000	0.486	0.000	0.000	0.000

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	80	137	0	0	0	0	-1
normalized size	1	1.00	0.86	1.47	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	0.227	0.477	0.000	0.459	0.000	0.000	0.000

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	79	185	0	0	0	0	-1
normalized size	1	1.00	0.92	2.15	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.104	0.191	0.562	0.000	0.512	0.000	0.000	0.000

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	96	337	0	0	0	0	-1
normalized size	1	1.00	0.74	2.59	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.169	0.369	0.532	0.000	0.527	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	106	487	0	0	0	0	-1
normalized size	1	1.00	0.63	2.92	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.233	0.405	0.600	0.000	0.473	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	69	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.095	0.398	0.710	0.000	0.544	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	69	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.089	0.351	0.507	0.000	0.552	0.000	0.000	0.000

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.082	0.330	0.562	0.000	0.432	0.000	0.000	0.000

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	67	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.097	0.324	0.489	0.000	0.555	0.000	0.000	0.000

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	63	0	0	0	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.099	0.541	0.413	0.000	0.491	0.000	0.000	0.000

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	63	0	0	0	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.094	0.432	0.401	0.000	0.618	0.000	0.000	0.000

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	63	0	0	0	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.096	0.459	0.392	0.000	0.445	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	69	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.094	0.488	0.393	0.000	0.528	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	65	0	0	0	0	0	-1
normalized size	1	1.00	1.02	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.093	0.428	0.423	0.000	0.677	0.000	0.000	0.000

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	66	0	0	0	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.087	0.350	0.559	0.000	0.602	0.000	0.000	0.000

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	66	0	0	0	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.083	0.338	0.627	0.000	0.590	0.000	0.000	0.000

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	64	0	0	0	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.096	0.412	0.518	0.000	0.659	0.000	0.000	0.000

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	85	0	0	0	0	0	-1
normalized size	1	1.00	1.33	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.099	0.615	0.384	0.000	0.682	0.000	0.000	0.000

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	72	0	0	0	0	0	-1
normalized size	1	1.00	1.12	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.092	0.502	0.433	0.000	0.613	0.000	0.000	0.000

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	67	0	0	0	0	0	-1
normalized size	1	1.00	1.05	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.094	0.753	0.363	0.000	0.477	0.000	0.000	0.000

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	70	0	0	0	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.093	0.386	0.385	0.000	0.531	0.000	0.000	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	53	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.049	0.062	0.520	0.000	0.445	0.000	0.000	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	53	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.035	0.035	1.000	0.000	0.625	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	18	18	17	0	18	17
normalized size	1	1.00	1.00	1.06	1.06	1.00	0.00	1.06	1.00
time (sec)	N/A	0.029	0.010	0.065	0.515	0.699	0.000	0.325	2.454

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	37	3161	47	57	0	0	91
normalized size	1	1.00	0.80	68.72	1.02	1.24	0.00	0.00	1.98
time (sec)	N/A	0.050	0.059	1.658	0.562	0.444	0.000	0.000	3.312

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	62	7964	71	112	0	0	219
normalized size	1	1.00	0.86	110.61	0.99	1.56	0.00	0.00	3.04
time (sec)	N/A	0.061	0.332	1.270	0.629	0.443	0.000	0.000	7.573

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	71	0	0	0	0	0	-1
normalized size	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.090	0.139	0.409	0.000	0.493	0.000	0.000	0.000

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	71	0	0	0	0	0	-1
normalized size	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.089	0.086	0.366	0.000	0.460	0.000	0.000	0.000

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	66	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.092	0.081	0.406	0.000	0.437	0.000	0.000	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	71	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.088	0.071	0.412	0.000	0.463	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	87	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.116	8.139	0.443	0.000	0.449	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	87	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.104	3.242	0.469	0.000	0.428	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	87	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.103	3.025	0.438	0.000	0.463	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	225	0	0	0	0	0	-1
normalized size	1	1.00	2.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.120	5.163	0.406	0.000	0.468	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	260	0	0	0	0	0	-1
normalized size	1	1.00	3.13	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.103	1.959	1.449	0.000	0.505	0.000	0.000	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	916	0	0	0	0	0	-1
normalized size	1	1.00	18.32	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.057	4.715	1.987	0.000	0.447	0.000	0.000	0.000

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	450	0	0	0	0	0	-1
normalized size	1	1.00	9.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.053	2.109	1.713	0.000	0.446	0.000	0.000	0.000

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	22	4284	28	42	0	0	53
normalized size	1	1.00	0.88	171.36	1.12	1.68	0.00	0.00	2.12
time (sec)	N/A	0.042	0.073	3.656	0.425	0.440	0.000	0.000	2.615

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	46	13019	55	86	0	0	138
normalized size	1	1.00	0.87	245.64	1.04	1.62	0.00	0.00	2.60
time (sec)	N/A	0.055	0.158	1.475	0.668	0.456	0.000	0.000	3.736

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	69	26124	81	144	0	0	-1
normalized size	1	1.00	0.86	326.55	1.01	1.80	0.00	0.00	-0.01
time (sec)	N/A	0.063	0.261	2.009	0.586	0.458	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	456	0	0	0	0	0	-1
normalized size	1	1.00	5.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.084	2.830	1.707	0.000	0.446	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	252	0	0	0	0	0	-1
normalized size	1	1.00	3.32	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.070	1.090	1.262	0.000	0.449	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	64	0	0	0	0	0	-1
normalized size	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.078	0.211	0.698	0.000	0.436	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	1242	0	0	0	0	0	-1
normalized size	1	1.00	15.92	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.082	15.523	0.789	0.000	0.441	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	1516	0	0	0	0	0	-1
normalized size	1	1.00	19.44	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.083	17.755	0.812	0.000	0.473	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	297	0	0	0	0	0	-1
normalized size	1	1.00	3.34	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.121	2.564	0.481	0.000	0.457	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	91	0	0	0	0	0	-1
normalized size	1	1.00	1.02	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.107	1.617	0.467	0.000	0.591	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	89	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.107	1.308	0.427	0.000	0.871	0.000	0.000	0.000

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	90	0	0	0	0	0	-1
normalized size	1	1.00	1.01	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.125	1.956	0.401	0.000	0.681	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	81	0	0	0	0	0	-1
normalized size	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.583	1.474	0.000	0.554	0.000	0.000	0.000

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	66	0	0	0	0	0	-1
normalized size	1	1.00	1.05	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.036	0.072	0.806	0.000	0.504	0.000	0.000	0.000

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	45	728	207	606	0	0	97
normalized size	1	1.00	0.19	3.14	0.89	2.61	0.00	0.00	0.42
time (sec)	N/A	0.227	0.078	0.754	0.458	0.580	0.000	0.000	2.583

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	45	548	190	568	0	0	83
normalized size	1	1.00	0.21	2.56	0.89	2.65	0.00	0.00	0.39
time (sec)	N/A	0.182	0.045	0.676	0.630	0.498	0.000	0.000	2.472

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	36	660	189	585	0	0	80
normalized size	1	1.00	0.17	3.14	0.90	2.79	0.00	0.00	0.38
time (sec)	N/A	0.179	0.052	0.624	0.812	0.582	0.000	0.000	2.476

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	132	292	167	487	0	0	61
normalized size	1	1.00	0.69	1.52	0.87	2.54	0.00	0.00	0.32
time (sec)	N/A	0.138	0.186	0.506	0.749	0.594	0.000	0.000	0.213

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	40	160	165	0	0	0	50
normalized size	1	1.00	0.21	0.83	0.86	0.00	0.00	0.00	0.26
time (sec)	N/A	0.117	0.042	0.137	0.527	0.000	0.000	0.000	2.552

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	162	172	178	0	0	0	74
normalized size	1	1.00	0.78	0.82	0.85	0.00	0.00	0.00	0.35
time (sec)	N/A	0.165	0.253	0.117	0.806	0.000	0.000	0.000	2.570

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	42	178	187	0	0	0	76
normalized size	1	1.00	0.20	0.83	0.87	0.00	0.00	0.00	0.36
time (sec)	N/A	0.162	0.049	0.185	0.940	0.000	0.000	0.000	2.597

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	172	190	199	0	0	0	90
normalized size	1	1.00	0.74	0.82	0.86	0.00	0.00	0.00	0.39
time (sec)	N/A	0.198	0.452	0.184	0.562	0.000	0.000	0.000	2.874

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	45	728	207	617	0	0	97
normalized size	1	1.00	0.19	3.11	0.88	2.64	0.00	0.00	0.41
time (sec)	N/A	0.214	0.066	0.684	0.546	0.617	0.000	0.000	2.579

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	45	548	190	587	0	0	83
normalized size	1	1.00	0.21	2.56	0.89	2.74	0.00	0.00	0.39
time (sec)	N/A	0.179	0.047	0.671	0.592	0.654	0.000	0.000	2.518

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	38	660	189	594	0	0	82
normalized size	1	1.00	0.18	3.11	0.89	2.80	0.00	0.00	0.39
time (sec)	N/A	0.174	0.049	0.630	0.491	0.537	0.000	0.000	2.488

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	134	292	167	502	0	0	61
normalized size	1	1.00	0.70	1.52	0.87	2.61	0.00	0.00	0.32
time (sec)	N/A	0.147	0.026	0.588	0.570	0.501	0.000	0.000	2.499

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	37	324	167	525	0	0	54
normalized size	1	1.00	0.19	1.69	0.87	2.73	0.00	0.00	0.28
time (sec)	N/A	0.138	0.010	0.508	0.914	0.625	0.000	0.000	2.528

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	159	176	179	0	0	0	75
normalized size	1	1.00	0.76	0.84	0.85	0.00	0.00	0.00	0.36
time (sec)	N/A	0.144	0.191	0.110	0.519	0.000	0.000	0.000	2.653

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	39	181	184	0	0	0	73
normalized size	1	1.00	0.18	0.86	0.87	0.00	0.00	0.00	0.35
time (sec)	N/A	0.157	0.059	0.101	0.505	0.000	0.000	0.000	2.634

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	172	194	199	0	0	0	91
normalized size	1	1.00	0.74	0.84	0.86	0.00	0.00	0.00	0.39
time (sec)	N/A	0.196	0.270	0.157	0.514	0.000	0.000	0.000	2.938

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	40	728	207	595	0	0	97
normalized size	1	1.00	0.17	3.15	0.90	2.58	0.00	0.00	0.42
time (sec)	N/A	0.207	0.112	0.699	0.483	0.552	0.000	0.000	2.572

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	38	548	190	579	0	0	81
normalized size	1	1.00	0.18	2.58	0.90	2.73	0.00	0.00	0.38
time (sec)	N/A	0.171	0.093	0.644	0.771	0.532	0.000	0.000	2.514

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	35	652	189	574	0	0	79
normalized size	1	1.00	0.17	3.12	0.90	2.75	0.00	0.00	0.38
time (sec)	N/A	0.164	0.068	0.633	0.913	0.558	0.000	0.000	0.194

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	131	166	165	0	0	0	57
normalized size	1	1.00	0.68	0.86	0.86	0.00	0.00	0.00	0.30
time (sec)	N/A	0.111	0.015	0.124	0.432	0.000	0.000	0.000	2.650

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	40	157	164	0	0	0	58
normalized size	1	1.00	0.21	0.82	0.85	0.00	0.00	0.00	0.30
time (sec)	N/A	0.130	0.041	0.127	0.668	0.000	0.000	0.000	2.505

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	159	184	181	0	0	0	77
normalized size	1	1.00	0.75	0.87	0.85	0.00	0.00	0.00	0.36
time (sec)	N/A	0.163	0.169	0.181	0.657	0.000	0.000	0.000	2.657

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	47	175	187	0	0	0	76
normalized size	1	1.00	0.22	0.82	0.87	0.00	0.00	0.00	0.36
time (sec)	N/A	0.160	0.064	0.186	0.812	0.000	0.000	0.000	2.667

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	38	728	207	607	0	0	93
normalized size	1	1.00	0.16	3.14	0.89	2.62	0.00	0.00	0.40
time (sec)	N/A	0.209	0.168	0.642	0.652	0.562	0.000	0.000	2.582

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	37	540	190	603	0	0	80
normalized size	1	1.00	0.18	2.56	0.90	2.86	0.00	0.00	0.38
time (sec)	N/A	0.174	0.078	0.587	0.738	0.573	0.000	0.000	0.199

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	38	184	187	0	0	0	76
normalized size	1	1.00	0.18	0.87	0.88	0.00	0.00	0.00	0.36
time (sec)	N/A	0.142	0.006	0.109	0.698	0.000	0.000	0.000	2.605

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	134	166	164	0	0	0	57
normalized size	1	1.00	0.70	0.86	0.85	0.00	0.00	0.00	0.30
time (sec)	N/A	0.132	0.031	0.102	0.483	0.000	0.000	0.000	2.582

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	40	166	167	0	0	0	58
normalized size	1	1.00	0.21	0.86	0.87	0.00	0.00	0.00	0.30
time (sec)	N/A	0.132	0.010	0.152	0.796	0.000	0.000	0.000	2.478

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	159	184	181	0	0	0	77
normalized size	1	1.00	0.75	0.87	0.85	0.00	0.00	0.00	0.36
time (sec)	N/A	0.162	0.156	0.160	0.694	0.000	0.000	0.000	2.618

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	47	184	187	0	0	0	76
normalized size	1	1.00	0.22	0.86	0.87	0.00	0.00	0.00	0.36
time (sec)	N/A	0.161	0.089	0.145	0.626	0.000	0.000	0.000	2.647

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	172	202	199	0	0	0	93
normalized size	1	1.00	0.74	0.86	0.85	0.00	0.00	0.00	0.40
time (sec)	N/A	0.188	0.437	0.150	0.915	0.000	0.000	0.000	2.978

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	62	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.058	0.094	0.908	0.000	0.509	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	64	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.067	0.067	0.728	0.000	0.503	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.059	0.063	0.856	0.000	0.413	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	67	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.069	0.095	0.737	0.000	0.558	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	52	60	51	59	0	82	334
normalized size	1	1.00	0.78	0.90	0.76	0.88	0.00	1.22	4.99
time (sec)	N/A	0.054	0.195	0.727	0.320	0.637	0.000	0.650	7.242

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	34	50	36	49	0	57	218
normalized size	1	1.00	0.76	1.11	0.80	1.09	0.00	1.27	4.84
time (sec)	N/A	0.045	0.147	0.611	0.328	0.628	0.000	0.623	6.091

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	19	18	37	0	23	53
normalized size	1	1.00	1.00	0.86	0.82	1.68	0.00	1.05	2.41
time (sec)	N/A	0.037	0.037	0.153	0.461	0.423	0.000	0.492	2.567

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	40	160	153	519	0	182	49
normalized size	1	1.00	0.21	0.83	0.80	2.70	0.00	0.95	0.26
time (sec)	N/A	0.111	0.039	0.084	0.856	0.589	0.000	0.417	2.499

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	102	522	193	1897	0	227	-1
normalized size	1	1.00	0.45	2.30	0.85	8.36	0.00	1.00	-0.00
time (sec)	N/A	0.170	0.193	0.555	0.753	110.913	0.000	0.559	0.000

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	102	559	0	0	0	0	-1
normalized size	1	1.00	0.95	5.22	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.129	0.443	0.566	0.000	0.730	0.000	0.000	0.000

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	61	513	0	0	0	0	-1
normalized size	1	1.00	0.81	6.84	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.090	0.277	0.472	0.000	0.720	0.000	0.000	0.000

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	57	523	0	0	0	0	-1
normalized size	1	1.00	1.21	11.13	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.065	0.099	0.502	0.000	0.771	0.000	0.000	0.000

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	94	537	0	0	0	0	-1
normalized size	1	1.00	1.16	6.63	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.457	0.575	0.000	0.819	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	86	550	0	0	0	0	-1
normalized size	1	1.00	0.77	4.95	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.139	0.777	0.533	0.000	0.746	0.000	0.000	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	52	60	51	68	0	78	392
normalized size	1	1.00	0.78	0.90	0.76	1.01	0.00	1.16	5.85
time (sec)	N/A	0.058	0.144	0.674	0.430	0.748	0.000	0.667	9.188

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	42	50	36	56	0	55	276
normalized size	1	1.00	0.93	1.11	0.80	1.24	0.00	1.22	6.13
time (sec)	N/A	0.053	0.136	0.725	0.322	0.781	0.000	0.538	6.945

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	19	18	45	0	24	100
normalized size	1	1.00	1.00	0.86	0.82	2.05	0.00	1.09	4.55
time (sec)	N/A	0.043	0.058	0.106	0.695	0.811	0.000	0.575	3.568

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	159	176	170	533	0	0	73
normalized size	1	1.00	0.76	0.84	0.81	2.54	0.00	0.00	0.35
time (sec)	N/A	0.142	0.267	0.087	0.842	0.832	0.000	0.000	2.654

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	110	670	188	1558	0	210	-1
normalized size	1	1.00	0.49	2.98	0.84	6.92	0.00	0.93	-0.00
time (sec)	N/A	0.163	0.277	0.470	0.614	83.683	0.000	0.590	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	90	251	0	0	0	0	-1
normalized size	1	1.00	0.66	1.85	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.183	0.824	0.589	0.000	0.509	0.000	0.000	0.000

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	80	225	0	0	0	0	-1
normalized size	1	1.00	0.74	2.08	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.145	0.475	0.606	0.000	0.654	0.000	0.000	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	69	188	0	0	0	0	-1
normalized size	1	1.00	0.86	2.35	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.085	0.314	0.416	0.000	0.522	0.000	0.000	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	58	196	0	0	0	0	-1
normalized size	1	1.00	0.74	2.51	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.145	0.470	0.000	0.688	0.000	0.000	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	96	222	0	0	0	0	-1
normalized size	1	1.00	0.89	2.06	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	1.127	0.504	0.000	0.441	0.000	0.000	0.000

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	131	250	0	0	0	0	-1
normalized size	1	1.00	0.96	1.84	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.174	2.469	0.506	0.000	0.708	0.000	0.000	0.000

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	52	60	51	82	0	84	474
normalized size	1	1.00	0.78	0.90	0.76	1.22	0.00	1.25	7.07
time (sec)	N/A	0.058	0.444	0.678	0.655	0.646	0.000	0.844	13.292

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	42	50	36	69	0	59	352
normalized size	1	1.00	0.93	1.11	0.80	1.53	0.00	1.31	7.82
time (sec)	N/A	0.050	0.273	0.584	0.329	0.596	0.000	0.721	7.224

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	19	18	55	0	28	230
normalized size	1	1.00	1.00	0.86	0.82	2.50	0.00	1.27	10.45
time (sec)	N/A	0.043	0.064	0.121	0.325	0.475	0.000	0.743	5.584

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	40	182	176	594	0	218	74
normalized size	1	1.00	0.19	0.86	0.83	2.80	0.00	1.03	0.35
time (sec)	N/A	0.142	0.044	0.069	0.587	0.497	0.000	0.550	2.735

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	107	532	194	1918	0	240	-1
normalized size	1	1.00	0.48	2.36	0.86	8.52	0.00	1.07	-0.00
time (sec)	N/A	0.163	0.194	0.546	0.731	110.715	0.000	1.387	0.000

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	253	253	125	558	225	1934	0	268	-1
normalized size	1	1.00	0.49	2.21	0.89	7.64	0.00	1.06	-0.00
time (sec)	N/A	0.180	0.197	0.483	0.796	123.538	0.000	0.646	0.000

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	79	224	0	0	0	0	-1
normalized size	1	1.00	0.72	2.06	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.544	0.706	0.000	0.509	0.000	0.000	0.000

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	68	196	0	0	0	0	-1
normalized size	1	1.00	0.86	2.48	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.096	0.269	0.628	0.000	0.558	0.000	0.000	0.000

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	77	167	0	0	0	0	-1
normalized size	1	1.00	1.64	3.55	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.059	0.129	0.444	0.000	0.414	0.000	0.000	0.000

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	126	199	0	0	0	0	-1
normalized size	1	1.00	1.66	2.62	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.093	0.553	0.489	0.000	0.500	0.000	0.000	0.000

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	94	226	0	0	0	0	-1
normalized size	1	1.00	0.86	2.07	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.127	1.008	0.577	0.000	0.568	0.000	0.000	0.000

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	45	60	54	64	0	80	268
normalized size	1	1.00	0.69	0.92	0.83	0.98	0.00	1.23	4.12
time (sec)	N/A	0.060	0.206	0.679	0.439	0.555	0.000	2.817	6.878

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	32	50	36	54	0	44	64
normalized size	1	1.00	0.74	1.16	0.84	1.26	0.00	1.02	1.49
time (sec)	N/A	0.052	0.102	0.600	0.716	0.534	0.000	2.216	2.971

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	19	18	40	0	18	51
normalized size	1	1.00	1.00	0.95	0.90	2.00	0.00	0.90	2.55
time (sec)	N/A	0.043	0.061	0.114	0.410	0.568	0.000	1.174	2.573

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	38	184	167	652	0	0	76
normalized size	1	1.00	0.18	0.87	0.79	3.08	0.00	0.00	0.36
time (sec)	N/A	0.142	0.039	0.090	0.516	0.534	0.000	0.000	2.685

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	115	982	204	2037	0	252	-1
normalized size	1	1.00	0.46	3.94	0.82	8.18	0.00	1.01	-0.00
time (sec)	N/A	0.183	0.292	0.511	0.728	109.447	0.000	0.931	0.000

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	104	537	0	0	0	0	-1
normalized size	1	1.00	0.75	3.89	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.174	0.898	0.662	0.000	0.604	0.000	0.000	0.000

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	93	499	0	0	0	0	-1
normalized size	1	1.00	0.89	4.80	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	0.475	0.643	0.000	0.492	0.000	0.000	0.000

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	69	496	0	0	0	0	-1
normalized size	1	1.00	0.88	6.36	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.092	0.395	0.447	0.000	0.667	0.000	0.000	0.000

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	66	509	0	0	0	0	-1
normalized size	1	1.00	0.85	6.53	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.098	0.412	0.514	0.000	0.583	0.000	0.000	0.000

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	77	523	0	0	0	0	-1
normalized size	1	1.00	0.69	4.67	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.149	0.568	0.518	0.000	0.762	0.000	0.000	0.000

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	89	536	0	0	0	0	-1
normalized size	1	1.00	0.63	3.77	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.187	0.852	0.543	0.000	0.629	0.000	0.000	0.000

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	113	306	0	0	0	0	-1
normalized size	1	1.00	1.38	3.73	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.087	0.687	0.439	0.000	0.639	0.000	0.000	0.000

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	103	986	0	0	0	0	-1
normalized size	1	1.00	0.94	8.96	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	1.540	0.615	0.000	0.524	0.000	0.000	0.000

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	77	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.059	0.219	0.253	0.000	0.452	0.000	0.000	0.000

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	56	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.059	0.086	0.247	0.000	0.608	0.000	0.000	0.000

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	56	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.058	0.089	0.241	0.000	0.481	0.000	0.000	0.000

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	56	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.058	0.084	0.213	0.000	0.583	0.000	0.000	0.000

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	54	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.058	0.075	0.222	0.000	0.612	0.000	0.000	0.000

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-1)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	89	0	0	0	0	0	-1
normalized size	1	1.00	1.68	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.059	1.109	0.317	0.000	0.591	0.000	0.000	0.000

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	78	0	0	0	0	0	-1
normalized size	1	1.00	1.47	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.058	0.865	0.316	0.000	0.567	0.000	0.000	0.000

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	77	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.057	0.753	0.307	0.000	0.647	0.000	0.000	0.000

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	78	0	0	0	0	0	-1
normalized size	1	1.00	1.47	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.060	0.197	0.267	0.000	0.613	0.000	0.000	0.000

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	77	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.059	0.254	0.279	0.000	0.643	0.000	0.000	0.000

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	80	0	0	0	0	0	-1
normalized size	1	1.00	1.40	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.043	0.292	0.240	0.000	0.550	0.000	0.000	0.000

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	80	0	0	0	0	0	-1
normalized size	1	1.00	1.40	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.042	0.307	0.227	0.000	0.650	0.000	0.000	0.000

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	80	0	0	0	0	0	-1
normalized size	1	1.00	1.40	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.036	0.281	0.230	0.000	0.595	0.000	0.000	0.000

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	80	0	0	0	0	0	-1
normalized size	1	1.00	1.40	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.043	0.215	0.206	0.000	0.706	0.000	0.000	0.000

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	79	0	0	0	0	0	-1
normalized size	1	1.00	1.39	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.044	0.195	0.214	0.000	0.599	0.000	0.000	0.000

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-1)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	92	0	0	0	0	0	-1
normalized size	1	1.00	1.61	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.042	1.115	0.307	0.000	0.564	0.000	0.000	0.000

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	69	0	0	0	0	0	-1
normalized size	1	1.00	1.21	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.043	0.162	0.307	0.000	0.621	0.000	0.000	0.000

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	69	0	0	0	0	0	-1
normalized size	1	1.00	1.21	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.037	0.153	0.289	0.000	0.542	0.000	0.000	0.000

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	69	0	0	0	0	0	-1
normalized size	1	1.00	1.21	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.039	0.149	0.263	0.000	0.589	0.000	0.000	0.000

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	67	0	0	0	0	0	-1
normalized size	1	1.00	1.18	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.045	0.141	0.270	0.000	0.694	0.000	0.000	0.000

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	174	600	0	788	0	0	-1
normalized size	1	1.00	0.98	3.37	0.00	4.43	0.00	0.00	-0.01
time (sec)	N/A	0.162	1.922	0.921	0.000	0.869	0.000	0.000	0.000

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	71	572	0	0	0	0	-1
normalized size	1	1.00	0.76	6.15	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	1.003	0.901	0.000	0.461	0.000	0.000	0.000

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	136	302	0	654	0	0	-1
normalized size	1	1.00	1.03	2.29	0.00	4.95	0.00	0.00	-0.01
time (sec)	N/A	0.098	0.734	0.666	0.000	0.801	0.000	0.000	0.000

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	62	551	0	0	0	0	-1
normalized size	1	1.00	1.13	10.02	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.061	0.518	0.696	0.000	0.508	0.000	0.000	0.000

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	50	0	50	53	0	55
normalized size	1	1.00	1.00	1.47	0.00	1.47	1.56	0.00	1.62
time (sec)	N/A	0.051	0.123	0.668	0.000	0.546	26.005	0.000	3.483

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	79	571	0	0	0	0	-1
normalized size	1	1.00	0.83	6.01	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.114	0.683	0.782	0.000	0.525	0.000	0.000	0.000

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	53	62	0	63	0	0	69
normalized size	1	1.00	0.74	0.86	0.00	0.88	0.00	0.00	0.96
time (sec)	N/A	0.103	0.168	0.683	0.000	0.615	0.000	0.000	3.355

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	92	585	0	0	0	0	-1
normalized size	1	1.00	0.70	4.43	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.168	0.966	0.714	0.000	0.519	0.000	0.000	0.000

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	95	239	0	0	0	0	-1
normalized size	1	1.00	0.73	1.82	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.176	0.780	0.730	0.000	0.593	0.000	0.000	0.000

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	129	759	0	769	0	0	-1
normalized size	1	1.00	0.76	4.49	0.00	4.55	0.00	0.00	-0.01
time (sec)	N/A	0.174	6.363	0.583	0.000	0.818	0.000	0.000	0.000

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	105	211	0	0	0	0	-1
normalized size	1	1.00	1.19	2.40	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.760	0.685	0.000	0.527	0.000	0.000	0.000

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	64	719	0	741	0	0	-1
normalized size	1	1.00	0.38	4.31	0.00	4.44	0.00	0.00	-0.01
time (sec)	N/A	0.125	4.289	0.680	0.000	1.072	0.000	0.000	0.000

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	98	207	0	0	0	0	-1
normalized size	1	1.00	1.02	2.16	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.121	0.590	0.670	0.000	0.564	0.000	0.000	0.000

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	141	50	0	58	0	0	65
normalized size	1	1.00	4.15	1.47	0.00	1.71	0.00	0.00	1.91
time (sec)	N/A	0.057	1.374	0.595	0.000	0.529	0.000	0.000	3.159

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	105	241	0	0	0	0	-1
normalized size	1	1.00	0.80	1.84	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.180	1.302	0.728	0.000	0.620	0.000	0.000	0.000

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	158	62	0	70	0	0	78
normalized size	1	1.00	1.53	0.60	0.00	0.68	0.00	0.00	0.76
time (sec)	N/A	0.163	3.355	0.586	0.000	0.595	0.000	0.000	3.519

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	189	628	0	852	0	0	-1
normalized size	1	1.00	0.91	3.02	0.00	4.10	0.00	0.00	-0.00
time (sec)	N/A	0.228	3.151	0.637	0.000	0.898	0.000	0.000	0.000

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	93	593	0	0	0	0	-1
normalized size	1	1.00	0.71	4.53	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.173	2.352	0.590	0.000	0.545	0.000	0.000	0.000

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	182	602	0	788	0	0	-1
normalized size	1	1.00	1.08	3.56	0.00	4.66	0.00	0.00	-0.01
time (sec)	N/A	0.153	1.751	0.640	0.000	0.738	0.000	0.000	0.000

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	74	585	0	0	0	0	-1
normalized size	1	1.00	0.84	6.65	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.113	0.744	0.715	0.000	0.584	0.000	0.000	0.000

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	181	570	0	766	0	0	-1
normalized size	1	1.00	1.08	3.39	0.00	4.56	0.00	0.00	-0.01
time (sec)	N/A	0.165	1.105	0.695	0.000	1.130	0.000	0.000	0.000

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	81	565	0	0	0	0	-1
normalized size	1	1.00	0.84	5.89	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.120	0.767	0.712	0.000	0.670	0.000	0.000	0.000

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	45	50	0	68	0	0	72
normalized size	1	1.00	1.32	1.47	0.00	2.00	0.00	0.00	2.12
time (sec)	N/A	0.055	0.164	0.562	0.000	0.745	0.000	0.000	3.213

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	99	586	0	0	0	0	-1
normalized size	1	1.00	0.76	4.47	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.177	0.985	0.646	0.000	0.583	0.000	0.000	0.000

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	136	758	0	782	0	0	-1
normalized size	1	1.00	0.76	4.26	0.00	4.39	0.00	0.00	-0.01
time (sec)	N/A	0.168	6.508	0.649	0.000	0.805	0.000	0.000	0.000

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	83	208	0	0	0	0	-1
normalized size	1	1.00	0.90	2.26	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.113	2.365	0.641	0.000	0.615	0.000	0.000	0.000

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	105	344	0	653	0	0	-1
normalized size	1	1.00	0.80	2.63	0.00	4.98	0.00	0.00	-0.01
time (sec)	N/A	0.106	4.420	0.628	0.000	1.225	0.000	0.000	0.000

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	89	175	0	0	0	0	-1
normalized size	1	1.00	1.62	3.18	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.061	0.464	0.632	0.000	0.732	0.000	0.000	0.000

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	50	0	47	51	0	52
normalized size	1	1.00	1.00	1.56	0.00	1.47	1.59	0.00	1.62
time (sec)	N/A	0.045	0.399	0.592	0.000	0.593	18.996	0.000	2.904

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	91	213	0	0	0	0	-1
normalized size	1	1.00	0.96	2.24	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.115	1.013	0.644	0.000	0.619	0.000	0.000	0.000

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	112	60	0	58	0	0	64
normalized size	1	1.00	1.56	0.83	0.00	0.81	0.00	0.00	0.89
time (sec)	N/A	0.097	1.176	0.592	0.000	0.505	0.000	0.000	3.022

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	211	1061	0	794	0	0	-1
normalized size	1	1.00	1.23	6.20	0.00	4.64	0.00	0.00	-0.01
time (sec)	N/A	0.167	1.095	0.615	0.000	0.994	0.000	0.000	0.000

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	70	535	0	0	0	0	-1
normalized size	1	1.00	0.72	5.52	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.123	0.633	0.586	0.000	0.760	0.000	0.000	0.000

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	50	0	52	53	0	46
normalized size	1	1.00	1.00	1.56	0.00	1.62	1.66	0.00	1.44
time (sec)	N/A	0.050	0.117	0.546	0.000	0.603	11.008	0.000	2.950

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	67	556	0	0	0	0	-1
normalized size	1	1.00	0.74	6.11	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.116	0.555	0.636	0.000	0.574	0.000	0.000	0.000

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	67	52	60	0	66	0	0	60
normalized size	1	0.93	0.72	0.83	0.00	0.92	0.00	0.00	0.83
time (sec)	N/A	0.108	0.178	0.533	0.000	0.583	0.000	0.000	3.196

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	81	570	0	0	0	0	-1
normalized size	1	1.00	0.62	4.38	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.186	0.658	0.635	0.000	0.634	0.000	0.000	0.000

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	144	1367	0	850	0	0	-1
normalized size	1	1.00	0.84	7.95	0.00	4.94	0.00	0.00	-0.01
time (sec)	N/A	0.180	1.215	0.657	0.000	0.994	0.000	0.000	0.000

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	116	314	0	0	0	0	-1
normalized size	1	1.00	1.15	3.11	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.126	0.440	0.589	0.000	0.572	0.000	0.000	0.000

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	50	0	61	0	0	55
normalized size	1	1.00	1.00	1.47	0.00	1.79	0.00	0.00	1.62
time (sec)	N/A	0.057	0.146	0.493	0.000	0.531	0.000	0.000	3.174

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	70	322	0	0	0	0	-1
normalized size	1	1.00	0.74	3.39	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.114	0.723	0.625	0.000	0.509	0.000	0.000	0.000

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	110	62	0	75	0	0	81
normalized size	1	1.00	1.59	0.90	0.00	1.09	0.00	0.00	1.17
time (sec)	N/A	0.101	0.846	0.575	0.000	0.421	0.000	0.000	3.563

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	112	336	0	0	0	0	-1
normalized size	1	1.00	0.85	2.55	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.184	2.388	0.625	0.000	0.546	0.000	0.000	0.000

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	159	72	0	89	0	0	93
normalized size	1	1.00	1.50	0.68	0.00	0.84	0.00	0.00	0.88
time (sec)	N/A	0.166	3.122	0.557	0.000	0.681	0.000	0.000	4.348

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.053	0.100	0.584	0.000	0.703	0.000	0.000	0.000

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	62	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.045	0.081	0.690	0.000	0.638	0.000	0.000	0.000

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	62	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.048	0.096	0.634	0.000	0.654	0.000	0.000	0.000

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.054	0.120	0.622	0.000	0.646	0.000	0.000	0.000

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.058	0.154	0.498	0.000	0.667	0.000	0.000	0.000

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	62	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.051	0.138	0.513	0.000	0.700	0.000	0.000	0.000

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	69	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.052	0.075	0.506	0.000	0.595	0.000	0.000	0.000

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	71	0	0	0	0	0	-1
normalized size	1	1.00	1.11	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.060	0.080	0.605	0.000	0.635	0.000	0.000	0.000

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	62	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.050	0.144	0.533	0.000	0.582	0.000	0.000	0.000

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	62	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.043	0.086	0.692	0.000	0.495	0.000	0.000	0.000

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	62	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.047	0.118	0.582	0.000	0.578	0.000	0.000	0.000

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	62	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.053	0.233	0.458	0.000	0.821	0.000	0.000	0.000

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.058	0.145	0.499	0.000	0.452	0.000	0.000	0.000

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.051	0.088	0.464	0.000	0.585	0.000	0.000	0.000

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.055	0.107	0.404	0.000	0.617	0.000	0.000	0.000

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	64	0	0	0	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.059	0.211	0.413	0.000	0.556	0.000	0.000	0.000

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	47	6797	77	80	0	0	199
normalized size	1	1.00	0.70	101.45	1.15	1.19	0.00	0.00	2.97
time (sec)	N/A	0.062	0.377	1.067	0.804	0.582	0.000	0.000	7.808

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	34	2707	51	50	0	0	87
normalized size	1	1.00	0.79	62.95	1.19	1.16	0.00	0.00	2.02
time (sec)	N/A	0.049	0.116	0.536	0.891	0.622	0.000	0.000	3.390

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	18	20	19	44	0	19
normalized size	1	1.00	1.00	1.06	1.18	1.12	2.59	0.00	1.12
time (sec)	N/A	0.021	0.023	0.058	0.439	0.615	0.421	0.000	0.118

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	124	0	0	0	0	0	-1
normalized size	1	1.00	3.10	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.042	0.823	1.111	0.000	0.540	0.000	0.000	0.000

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	815	0	0	0	0	0	-1
normalized size	1	1.00	20.90	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.044	12.234	0.765	0.000	0.547	0.000	0.000	0.000

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	2138	0	0	0	0	0	-1
normalized size	1	1.00	53.45	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.044	21.628	0.431	0.000	0.622	0.000	0.000	0.000

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	110	0	0	0	0	0	-1
normalized size	1	1.00	1.75	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.040	0.255	0.377	0.000	0.468	0.000	0.000	0.000

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	6612	0	0	0	0	0	-1
normalized size	1	1.00	104.95	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.038	25.158	0.556	0.000	0.446	0.000	0.000	0.000

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	4872	0	0	0	0	0	-1
normalized size	1	1.00	82.58	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.037	21.387	0.610	0.000	0.531	0.000	0.000	0.000

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	6532	0	0	0	0	0	-1
normalized size	1	1.00	103.68	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.037	26.007	0.398	0.000	0.527	0.000	0.000	0.000

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.037	0.597	0.430	0.000	0.495	0.000	0.000	0.000

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	80	0	0	0	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.045	0.134	1.464	0.000	0.491	0.000	0.000	0.000

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	101	0	77	85	0	0	-1
normalized size	1	1.00	1.36	0.00	1.04	1.15	0.00	0.00	-0.01
time (sec)	N/A	0.066	2.101	0.626	0.952	0.564	0.000	0.000	0.000

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	78	0	51	61	0	0	139
normalized size	1	1.00	1.59	0.00	1.04	1.24	0.00	0.00	2.84
time (sec)	N/A	0.051	1.147	0.499	1.237	0.535	0.000	0.000	3.845

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	25	25	24	40	0	0	49
normalized size	1	1.00	1.04	1.04	1.00	1.67	0.00	0.00	2.04
time (sec)	N/A	0.039	0.019	0.107	0.732	0.542	0.000	0.000	2.642

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	53	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.029	0.041	0.723	0.000	0.517	0.000	0.000	0.000

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	939	0	0	0	0	0	-1
normalized size	1	1.00	18.78	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.047	4.096	1.494	0.000	0.469	0.000	0.000	0.000

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	1712	0	0	0	0	0	-1
normalized size	1	1.00	34.24	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.045	12.629	1.522	0.000	0.553	0.000	0.000	0.000

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	72	0	0	0	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.038	0.130	0.465	0.000	0.585	0.000	0.000	0.000

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	72	0	0	0	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.038	0.101	0.429	0.000	0.544	0.000	0.000	0.000

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	64	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.024	0.071	0.689	0.000	0.656	0.000	0.000	0.000

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	452	0	0	0	0	0	-1
normalized size	1	1.00	6.28	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.031	2.388	1.300	0.000	0.517	0.000	0.000	0.000

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	1313	0	0	0	0	0	-1
normalized size	1	1.00	16.83	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.037	6.232	1.890	0.000	0.561	0.000	0.000	0.000

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	52	0	0	0	0	0	-1
normalized size	1	1.00	1.30	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.046	0.098	0.487	0.000	0.503	0.000	0.000	0.000

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	52	0	0	0	0	0	-1
normalized size	1	1.00	1.33	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.036	0.049	0.968	0.000	0.566	0.000	0.000	0.000

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	21	20	56	21	43
normalized size	1	1.00	1.00	1.06	1.17	1.11	3.11	1.17	2.39
time (sec)	N/A	0.021	0.017	0.053	0.691	0.574	0.427	0.444	2.835

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	36	6612	50	60	0	0	92
normalized size	1	1.00	0.84	153.77	1.16	1.40	0.00	0.00	2.14
time (sec)	N/A	0.047	0.084	1.263	0.667	0.555	0.000	0.000	3.439

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	63	16599	78	115	0	0	222
normalized size	1	1.00	0.91	240.57	1.13	1.67	0.00	0.00	3.22
time (sec)	N/A	0.060	0.303	1.127	0.701	0.531	0.000	0.000	7.629

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	212	0	0	0	0	0	-1
normalized size	1	1.00	3.37	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.036	1.382	0.475	0.000	0.557	0.000	0.000	0.000

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	79	0	0	0	0	0	-1
normalized size	1	1.00	1.36	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.036	0.632	0.405	0.000	0.577	0.000	0.000	0.000

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	186	0	0	0	0	0	-1
normalized size	1	1.00	2.95	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.036	1.189	0.425	0.000	0.534	0.000	0.000	0.000

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	106	0	0	0	0	0	-1
normalized size	1	1.00	1.68	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.036	0.262	0.447	0.000	0.526	0.000	0.000	0.000

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	87	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.167	5.584	0.549	0.000	0.589	0.000	0.000	0.000

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	87	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.145	3.202	0.573	0.000	0.489	0.000	0.000	0.000

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	87	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.151	1.264	0.542	0.000	0.522	0.000	0.000	0.000

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	87	0	0	0	0	0	-1
normalized size	1	1.00	1.10	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.174	3.584	0.533	0.000	0.691	0.000	0.000	0.000

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	287	0	0	0	0	0	-1
normalized size	1	1.00	3.22	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.150	2.042	1.532	0.000	0.721	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [9] had the largest ratio of [.7500]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	1	1	1.00	6	0.167
2	A	2	2	1.00	8	0.250
3	A	2	2	1.00	8	0.250
4	A	3	2	1.00	8	0.250
5	A	3	2	1.00	8	0.250
6	A	4	2	1.00	8	0.250
7	A	4	2	1.00	8	0.250
8	A	5	2	1.00	8	0.250
9	A	13	9	1.00	12	0.750
10	A	12	9	1.00	12	0.750
11	A	12	9	1.00	12	0.750
12	A	11	8	1.00	12	0.667
13	A	11	8	1.00	12	0.667
14	A	12	9	1.00	12	0.750
15	A	12	9	1.00	12	0.750
16	A	13	9	1.00	12	0.750
17	A	13	9	1.00	12	0.750
18	A	12	8	1.00	12	0.667
19	A	9	9	1.00	12	0.750
20	A	9	9	1.00	12	0.750
21	A	12	8	1.00	12	0.667
22	A	13	9	1.00	12	0.750

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
23	A	2	2	1.00	10	0.200
24	A	4	3	1.00	14	0.214
25	A	3	3	1.00	14	0.214
26	A	2	2	1.00	14	0.143
27	A	2	2	1.00	14	0.143
28	A	3	3	1.00	14	0.214
29	A	4	3	1.00	14	0.214
30	A	16	10	1.00	14	0.714
31	A	14	10	1.00	14	0.714
32	A	13	10	1.00	14	0.714
33	A	13	10	1.00	14	0.714
34	A	14	10	1.00	14	0.714
35	A	16	10	1.00	14	0.714
36	A	7	3	1.00	14	0.214
37	A	5	3	1.00	14	0.214
38	A	3	3	1.00	14	0.214
39	A	3	3	1.00	14	0.214
40	A	5	3	1.00	14	0.214
41	A	7	3	1.00	14	0.214
42	A	3	3	1.00	12	0.250
43	A	3	3	1.00	12	0.250
44	A	3	3	1.00	12	0.250
45	A	3	3	1.00	12	0.250
46	A	3	3	1.00	14	0.214
47	A	3	3	1.00	14	0.214
48	A	3	3	1.00	14	0.214

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
49	A	3	3	1.00	14	0.214
50	A	3	3	1.00	14	0.214
51	A	3	3	1.00	14	0.214
52	A	2	2	1.00	14	0.143
53	A	3	3	1.00	14	0.214
54	A	13	9	1.00	21	0.429
55	A	12	9	1.00	21	0.429
56	A	2	2	1.00	21	0.095
57	A	3	2	1.00	21	0.095
58	A	3	2	1.00	21	0.095
59	A	5	4	1.00	21	0.190
60	A	4	4	1.00	19	0.210
61	A	3	3	1.00	19	0.158
62	A	4	4	1.00	21	0.190
63	A	5	4	1.00	21	0.190
64	A	14	10	1.00	21	0.476
65	A	13	10	1.00	21	0.476
66	A	2	2	1.00	21	0.095
67	A	3	2	1.00	21	0.095
68	A	3	2	1.00	21	0.095
69	A	5	5	1.00	21	0.238
70	A	4	4	1.00	19	0.210
71	A	4	4	1.00	19	0.210
72	A	5	5	1.00	21	0.238
73	A	14	10	1.00	21	0.476
74	A	13	10	1.00	21	0.476

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
75	A	2	2	1.00	21	0.095
76	A	3	2	1.00	21	0.095
77	A	3	2	1.00	21	0.095
78	A	6	5	1.00	21	0.238
79	A	5	5	1.00	19	0.263
80	A	4	4	1.00	19	0.210
81	A	4	4	1.00	21	0.190
82	A	5	5	1.00	21	0.238
83	A	6	5	1.00	21	0.238
84	A	13	9	1.00	21	0.429
85	A	12	9	1.00	21	0.429
86	A	2	2	1.00	21	0.095
87	A	3	2	1.00	21	0.095
88	A	3	2	1.00	21	0.095
89	A	5	4	1.00	21	0.190
90	A	4	4	1.00	21	0.190
91	A	3	3	1.00	19	0.158
92	A	4	4	1.00	19	0.210
93	A	5	5	1.00	21	0.238
94	A	13	10	1.00	21	0.476
95	A	12	9	1.00	21	0.429
96	A	2	2	1.00	21	0.095
97	A	3	2	1.00	21	0.095
98	A	3	2	1.00	21	0.095
99	A	5	5	1.00	21	0.238
100	A	4	4	1.00	19	0.210

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
101	A	4	4	1.00	19	0.210
102	A	5	5	1.00	21	0.238
103	A	13	10	1.00	21	0.476
104	A	12	9	1.00	21	0.429
105	A	2	2	1.00	21	0.095
106	A	3	2	1.00	21	0.095
107	A	3	2	1.00	21	0.095
108	A	6	5	1.00	21	0.238
109	A	5	5	1.00	21	0.238
110	A	4	4	1.00	21	0.190
111	A	4	4	1.00	19	0.210
112	A	5	5	1.00	19	0.263
113	A	6	6	1.00	21	0.286
114	A	2	2	1.00	25	0.080
115	A	3	3	1.00	25	0.120
116	A	1	1	1.00	25	0.040
117	A	2	2	1.00	25	0.080
118	A	7	7	1.00	25	0.280
119	A	3	3	1.00	25	0.120
120	A	4	4	1.00	25	0.160
121	A	2	2	1.00	25	0.080
122	A	3	3	1.00	25	0.120
123	A	1	1	1.00	25	0.040
124	A	3	3	1.00	25	0.120
125	A	8	8	1.00	25	0.320
126	A	4	3	1.00	25	0.120

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
127	A	2	2	1.00	25	0.080
128	A	3	3	1.00	25	0.120
129	A	1	1	1.00	25	0.040
130	A	2	2	1.00	25	0.080
131	A	7	7	1.00	25	0.280
132	A	3	3	1.00	25	0.120
133	A	8	8	1.00	25	0.320
134	A	4	3	1.00	25	0.120
135	A	3	3	1.00	25	0.120
136	A	1	1	1.00	25	0.040
137	A	8	8	1.00	25	0.320
138	A	8	8	1.00	25	0.320
139	A	5	4	1.00	25	0.160
140	A	4	4	1.00	25	0.160
141	A	3	3	1.00	25	0.120
142	A	3	3	1.00	25	0.120
143	A	4	4	1.00	25	0.160
144	A	5	4	1.00	25	0.160
145	A	2	2	1.00	25	0.080
146	A	2	2	1.00	25	0.080
147	A	2	2	1.00	25	0.080
148	A	2	2	1.00	25	0.080
149	A	2	2	1.00	25	0.080
150	A	2	2	1.00	25	0.080
151	A	2	2	1.00	25	0.080
152	A	2	2	1.00	25	0.080

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
153	A	2	2	1.00	25	0.080
154	A	2	2	1.00	25	0.080
155	A	2	2	1.00	25	0.080
156	A	2	2	1.00	25	0.080
157	A	2	2	1.00	25	0.080
158	A	2	2	1.00	25	0.080
159	A	2	2	1.00	25	0.080
160	A	2	2	1.00	25	0.080
161	A	2	2	1.00	19	0.105
162	A	2	2	1.00	17	0.118
163	A	2	2	1.00	17	0.118
164	A	3	2	1.00	19	0.105
165	A	3	2	1.00	19	0.105
166	A	2	2	1.00	19	0.105
167	A	2	2	1.00	19	0.105
168	A	2	2	1.00	19	0.105
169	A	2	2	1.00	19	0.105
170	A	2	2	1.00	23	0.087
171	A	2	2	1.00	23	0.087
172	A	2	2	1.00	23	0.087
173	A	2	2	1.00	23	0.087
174	A	2	2	1.00	21	0.095
175	A	2	2	1.00	19	0.105
176	A	2	2	1.00	19	0.105
177	A	2	2	1.00	19	0.105
178	A	3	2	1.00	19	0.105

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
179	A	3	2	1.00	19	0.105
180	A	2	2	1.00	19	0.105
181	A	2	2	1.00	17	0.118
182	A	2	2	1.00	17	0.118
183	A	2	2	1.00	19	0.105
184	A	2	2	1.00	19	0.105
185	A	2	2	1.00	23	0.087
186	A	2	2	1.00	23	0.087
187	A	2	2	1.00	23	0.087
188	A	2	2	1.00	23	0.087
189	A	2	2	1.00	21	0.095
190	A	3	3	1.00	21	0.143
191	A	14	10	1.00	21	0.476
192	A	13	10	1.00	21	0.476
193	A	13	10	1.00	21	0.476
194	A	12	9	1.00	19	0.474
195	A	11	8	1.00	12	0.667
196	A	13	10	1.00	19	0.526
197	A	13	10	1.00	21	0.476
198	A	14	10	1.00	21	0.476
199	A	14	10	1.00	21	0.476
200	A	13	10	1.00	21	0.476
201	A	13	10	1.00	21	0.476
202	A	12	9	1.00	21	0.429
203	A	12	9	1.00	19	0.474
204	A	12	9	1.00	12	0.750

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
205	A	13	10	1.00	19	0.526
206	A	14	10	1.00	21	0.476
207	A	14	10	1.00	21	0.476
208	A	13	10	1.00	21	0.476
209	A	13	10	1.00	19	0.526
210	A	11	8	1.00	12	0.667
211	A	12	9	1.00	19	0.474
212	A	13	10	1.00	21	0.476
213	A	13	10	1.00	21	0.476
214	A	14	10	1.00	21	0.476
215	A	13	10	1.00	19	0.526
216	A	12	9	1.00	12	0.750
217	A	12	9	1.00	19	0.474
218	A	12	9	1.00	21	0.429
219	A	13	10	1.00	21	0.476
220	A	13	10	1.00	21	0.476
221	A	14	10	1.00	21	0.476
222	A	3	3	1.00	17	0.176
223	A	3	3	1.00	19	0.158
224	A	3	3	1.00	19	0.158
225	A	3	3	1.00	21	0.143
226	A	3	2	1.00	21	0.095
227	A	3	2	1.00	21	0.095
228	A	2	2	1.00	21	0.095
229	A	11	8	1.00	12	0.667
230	A	12	9	1.00	21	0.429

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
231	A	5	4	1.00	21	0.190
232	A	4	4	1.00	19	0.210
233	A	3	3	1.00	19	0.158
234	A	4	4	1.00	21	0.190
235	A	5	4	1.00	21	0.190
236	A	3	2	1.00	21	0.095
237	A	3	2	1.00	21	0.095
238	A	2	2	1.00	21	0.095
239	A	12	9	1.00	12	0.750
240	A	12	9	1.00	21	0.429
241	A	6	5	1.00	21	0.238
242	A	5	5	1.00	21	0.238
243	A	4	4	1.00	19	0.210
244	A	4	4	1.00	19	0.210
245	A	5	5	1.00	21	0.238
246	A	6	5	1.00	21	0.238
247	A	3	2	1.00	21	0.095
248	A	3	2	1.00	21	0.095
249	A	2	2	1.00	21	0.095
250	A	12	9	1.00	12	0.750
251	A	12	9	1.00	21	0.429
252	A	13	10	1.00	21	0.476
253	A	5	4	1.00	21	0.190
254	A	4	4	1.00	21	0.190
255	A	3	3	1.00	19	0.158
256	A	4	4	1.00	19	0.210

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
257	A	5	4	1.00	21	0.190
258	A	3	2	1.00	21	0.095
259	A	3	2	1.00	21	0.095
260	A	2	2	1.00	21	0.095
261	A	12	9	1.00	12	0.750
262	A	13	10	1.00	21	0.476
263	A	6	5	1.00	21	0.238
264	A	5	5	1.00	21	0.238
265	A	4	4	1.00	19	0.210
266	A	4	4	1.00	19	0.210
267	A	5	5	1.00	21	0.238
268	A	6	5	1.00	21	0.238
269	A	4	4	1.00	19	0.210
270	A	5	4	1.00	21	0.190
271	A	2	2	1.00	19	0.105
272	A	2	2	1.00	19	0.105
273	A	2	2	1.00	19	0.105
274	A	2	2	1.00	19	0.105
275	A	2	2	1.00	19	0.105
276	A	2	2	1.00	19	0.105
277	A	2	2	1.00	19	0.105
278	A	2	2	1.00	19	0.105
279	A	2	2	1.00	19	0.105
280	A	2	2	1.00	19	0.105
281	A	1	1	1.00	21	0.048
282	A	1	1	1.00	21	0.048

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
283	A	1	1	1.00	21	0.048
284	A	1	1	1.00	21	0.048
285	A	1	1	1.00	21	0.048
286	A	1	1	1.00	21	0.048
287	A	1	1	1.00	21	0.048
288	A	1	1	1.00	21	0.048
289	A	1	1	1.00	21	0.048
290	A	1	1	1.00	21	0.048
291	A	7	7	1.00	25	0.280
292	A	4	4	1.00	25	0.160
293	A	6	6	1.00	25	0.240
294	A	3	3	1.00	25	0.120
295	A	1	1	1.00	25	0.040
296	A	4	4	1.00	25	0.160
297	A	2	2	1.00	25	0.080
298	A	5	4	1.00	25	0.160
299	A	5	5	1.00	25	0.200
300	A	7	7	1.00	25	0.280
301	A	4	4	1.00	25	0.160
302	A	7	7	1.00	25	0.280
303	A	4	4	1.00	25	0.160
304	A	1	1	1.00	25	0.040
305	A	5	5	1.00	25	0.200
306	A	3	3	1.00	25	0.120
307	A	8	8	1.00	25	0.320
308	A	5	5	1.00	25	0.200

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
309	A	7	7	1.00	25	0.280
310	A	4	4	1.00	25	0.160
311	A	7	7	1.00	25	0.280
312	A	4	4	1.00	25	0.160
313	A	1	1	1.00	25	0.040
314	A	5	5	1.00	25	0.200
315	A	7	7	1.00	25	0.280
316	A	4	4	1.00	25	0.160
317	A	6	6	1.00	25	0.240
318	A	3	3	1.00	25	0.120
319	A	1	1	1.00	25	0.040
320	A	4	4	1.00	25	0.160
321	A	2	2	1.00	25	0.080
322	A	7	7	1.00	25	0.280
323	A	4	4	1.00	25	0.160
324	A	1	1	1.00	25	0.040
325	A	4	4	1.00	25	0.160
326	A	2	2	0.93	25	0.080
327	A	5	5	1.00	25	0.200
328	A	7	7	1.00	25	0.280
329	A	4	4	1.00	25	0.160
330	A	1	1	1.00	25	0.040
331	A	4	4	1.00	25	0.160
332	A	2	2	1.00	25	0.080
333	A	5	5	1.00	25	0.200
334	A	3	3	1.00	25	0.120

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
335	A	1	1	1.00	25	0.040
336	A	1	1	1.00	25	0.040
337	A	1	1	1.00	25	0.040
338	A	1	1	1.00	25	0.040
339	A	1	1	1.00	25	0.040
340	A	1	1	1.00	25	0.040
341	A	1	1	1.00	25	0.040
342	A	1	1	1.00	25	0.040
343	A	1	1	1.00	25	0.040
344	A	1	1	1.00	25	0.040
345	A	1	1	1.00	25	0.040
346	A	1	1	1.00	25	0.040
347	A	1	1	1.00	25	0.040
348	A	1	1	1.00	25	0.040
349	A	1	1	1.00	25	0.040
350	A	1	1	1.00	25	0.040
351	A	3	2	1.00	19	0.105
352	A	3	2	1.00	19	0.105
353	A	2	2	1.00	17	0.118
354	A	2	2	1.00	17	0.118
355	A	2	2	1.00	19	0.105
356	A	2	2	1.00	19	0.105
357	A	1	1	1.00	19	0.053
358	A	1	1	1.00	19	0.053
359	A	1	1	1.00	19	0.053
360	A	1	1	1.00	19	0.053

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
361	A	1	1	1.00	19	0.053
362	A	1	1	1.00	21	0.048
363	A	3	2	1.00	19	0.105
364	A	3	2	1.00	19	0.105
365	A	2	2	1.00	19	0.105
366	A	2	2	1.00	10	0.200
367	A	2	2	1.00	19	0.105
368	A	2	2	1.00	19	0.105
369	A	1	1	1.00	19	0.053
370	A	1	1	1.00	19	0.053
371	A	1	1	1.00	17	0.059
372	A	1	1	1.00	17	0.059
373	A	1	1	1.00	19	0.053
374	A	2	2	1.00	19	0.105
375	A	2	2	1.00	17	0.118
376	A	2	2	1.00	17	0.118
377	A	3	2	1.00	19	0.105
378	A	3	2	1.00	19	0.105
379	A	1	1	1.00	19	0.053
380	A	1	1	1.00	19	0.053
381	A	1	1	1.00	19	0.053
382	A	1	1	1.00	19	0.053
383	A	3	3	1.00	23	0.130
384	A	3	3	1.00	23	0.130
385	A	3	3	1.00	23	0.130
386	A	3	3	1.00	23	0.130

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
387	A	3	3	1.00	21	0.143

Chapter 3

Listing of integrals

3.1 $\int \tan(c + dx)\,dx$

Optimal. Leaf size=12

$$-\frac{\log(\cos(c + dx))}{d}$$

```
[Out] -ln(cos(d*x+c))/d
```

Rubi [A] time = 0.00, antiderivative size = 12, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3475}

$$-\frac{\log(\cos(c + dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x],x]
```

```
[Out] -(Log[Cos[c + d*x]]/d)
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \tan(c + dx)\,dx = -\frac{\log(\cos(c + dx))}{d}$$

Mathematica [A] time = 0.01, size = 12, normalized size = 1.00

$$-\frac{\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x],x]
```

```
[Out] -(Log[Cos[c + d*x]]/d)
```

fricas [A] time = 1.40, size = 18, normalized size = 1.50

$$-\frac{\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c),x, algorithm="fricas")
```

```
[Out] -1/2*log(1/(tan(d*x + c)^2 + 1))/d
```

giac [A] time = 0.38, size = 13, normalized size = 1.08

$$-\frac{\log\left(|\cos\left(dx+c\right)|\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c),x, algorithm="giac")
```

```
[Out] -log(abs(cos(d*x + c)))/d
```

maple [A] time = 0.01, size = 17, normalized size = 1.42

$$\frac{\ln\left(1+\tan^2\left(dx+c\right)\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c),x)
```

```
[Out] 1/2/d*ln(1+tan(d*x+c)^2)
```

maxima [A] time = 0.43, size = 11, normalized size = 0.92

$$\frac{\log\left(\sec\left(dx+c\right)\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c),x, algorithm="maxima")
[Out] log(sec(d*x + c))/d
```

mupad [B] time = 2.57, size = 16, normalized size = 1.33

$$\frac{\ln\left(\tan\left(c+d\,x\right)^2+1\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x),x)
[Out] log(tan(c + d*x)^2 + 1)/(2*d)
```

sympy [A] time = 0.11, size = 19, normalized size = 1.58

$$\begin{cases} \frac{\log\left(\tan^{2}\left(c+dx\right)+1\right)}{2d} & \text{for}\ d \neq 0 \\ x\tan\left(c\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c),x)
[Out] Piecewise((log(tan(c + d*x)**2 + 1)/(2*d), Ne(d, 0)), (x*tan(c), True))
```

3.2 $\int \tan^2(c+dx)\,dx$

Optimal. Leaf size=14

$$\frac{\tan(c+dx)}{d}-x$$

```
[Out] -x+tan(d*x+c)/d
```

Rubi [A] time = 0.01, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3473, 8}

$$\frac{\tan(c+dx)}{d}-x$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^2,x]
```

```
[Out] -x + Tan[c + d*x]/d
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \tan^2(c+dx)\,dx &= \frac{\tan(c+dx)}{d}-\int 1\,dx\\ &= -x+\frac{\tan(c+dx)}{d}\end{aligned}$$

Mathematica [A] time = 0.01, size = 23, normalized size = 1.64

$$\frac{\tan(c+dx)}{d}-\frac{\tan^{-1}(\tan(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^2,x]
```

```
[Out] -(ArcTan[Tan[c + d*x]]/d) + Tan[c + d*x]/d
```

fricas [A] time = 1.35, size = 17, normalized size = 1.21

$$-\frac{dx - \tan(dx + c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] -(d*x - tan(d*x + c))/d
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)(-4*d*x*tan(c)*tan(d*x)+4*d*x-pi*sign(2*tan(c)^2*tan(d
*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)*tan(d*x)+pi*sign(2*tan(
c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))-pi*tan(c)*tan(d*x)+p
i+2*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)*tan(d*x)-2*atan((tan
(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))+2*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x
)-1))*tan(c)*tan(d*x)-2*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))-4*tan(c
)-4*tan(d*x))/(4*d*tan(c)*tan(d*x)-4*d)
```

maple [A] time = 0.01, size = 24, normalized size = 1.71

$$\frac{\tan(dx + c)}{d} - \frac{\arctan(\tan(dx + c))}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^2,x)
```

```
[Out] tan(d*x+c)/d-1/d*arctan(tan(d*x+c))
```

maxima [A] time = 0.42, size = 18, normalized size = 1.29

$$-\frac{dx + c - \tan(dx + c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] -(d*x + c - tan(d*x + c))/d
```

mupad [B] time = 2.51, size = 14, normalized size = 1.00

$$\frac{\tan\left(c+d\,x\right)}{d}-x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x)^2,x)
```

```
[Out] tan(c + d*x)/d - x
```

sympy [A] time = 0.14, size = 15, normalized size = 1.07

$$\begin{cases} -x + \frac{\tan\left(c+dx\right)}{d} & \text{for } d \neq 0 \\ x\tan^{2}\left(c\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**2,x)
```

```
[Out] Piecewise((-x + tan(c + d*x)/d, Ne(d, 0)), (x*tan(c)**2, True))
```

3.3 $\int \tan^3(c+dx)\,dx$

Optimal. Leaf size=27

$$\frac{\tan^2(c+dx)}{2d}+\frac{\log(\cos(c+dx))}{d}$$

```
[Out] ln(cos(d*x+c))/d+1/2*tan(d*x+c)^2/d
```

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3473, 3475}

$$\frac{\tan^2(c+dx)}{2d}+\frac{\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^3,x]
```

```
[Out] Log[Cos[c + d*x]]/d + Tan[c + d*x]^2/(2*d)
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \tan^3(c+dx)\,dx &= \frac{\tan^2(c+dx)}{2d}-\int \tan(c+dx)\,dx\\ &= \frac{\log(\cos(c+dx))}{d}+\frac{\tan^2(c+dx)}{2d}\end{aligned}$$

Mathematica [A] time = 0.03, size = 25, normalized size = 0.93

$$\frac{\tan^2(c+dx)+2\log(\cos(c+dx))}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^3,x]
```

```
[Out] (2*Log[Cos[c + d*x]] + Tan[c + d*x]^2)/(2*d)
```

fricas [A] time = 1.37, size = 27, normalized size = 1.00

$$\frac{\tan(dx+c)^2 + \log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(tan(d*x + c)^2 + log(1/(tan(d*x + c)^2 + 1)))/d
```

giac [B] time = 1.52, size = 246, normalized size = 9.11

$$\log\left(\frac{4\left(\tan(dx)^4\tan(c)^2 - 2\tan(dx)^3\tan(c) + \tan(dx)^2\tan(c)^2 + \tan(dx)^2 - 2\tan(dx)\tan(c) + 1\right)}{\tan(c)^2+1}\right)\tan(dx)^2\tan(c)^2 + \tan(dx)^2\tan(c)^2 - 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3,x, algorithm="giac")
```

```
[Out] 1/2*(log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*tan(d*x)^2*tan(c)^2
+ tan(d*x)^2*tan(c)^2 - 2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
+ tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))
*tan(d*x)*tan(c) + tan(d*x)^2 + tan(c)^2 + log(4*(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
)/(tan(c)^2 + 1)) + 1)/(d*tan(d*x)^2*tan(c)^2 - 2*d*tan(d*x)*tan(c) + d)
```

maple [A] time = 0.01, size = 31, normalized size = 1.15

$$\frac{\tan^2(dx+c)}{2d} - \frac{\ln\left(1+\tan^2(dx+c)\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^3,x)
```

```
[Out] 1/2*tan(d*x+c)^2/d-1/2/d*ln(1+tan(d*x+c)^2)
```

maxima [A] time = 0.61, size = 31, normalized size = 1.15

$$-\frac{\frac{1}{\sin(dx+c)^2-1} - \log\left(\sin(dx+c)^2 - 1\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(1/(sin(d*x + c)^2 - 1) - log(sin(d*x + c)^2 - 1))/d
```

mupad [B] time = 2.51, size = 30, normalized size = 1.11

$$\frac{\tan(c+d\,x)^2}{2\,d} - \frac{\ln\left(\tan(c+d\,x)^2+1\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x)^3,x)
```

```
[Out] tan(c + d*x)^2/(2*d) - log(tan(c + d*x)^2 + 1)/(2*d)
```

sympy [A] time = 0.18, size = 32, normalized size = 1.19

$$\begin{cases} -\frac{\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{\tan^2(c+dx)}{2d} & \text{for } d \neq 0 \\ x\tan^3(c) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**3,x)
```

```
[Out] Piecewise((-log(tan(c + d*x)**2 + 1)/(2*d) + tan(c + d*x)**2/(2*d), Ne(d, 0
)), (x*tan(c)**3, True))
```

3.4 $\int \tan^4(c+dx)\,dx$

Optimal. Leaf size=28

$$\frac{\tan^3(c+dx)}{3d}-\frac{\tan(c+dx)}{d}+x$$

```
[Out] x-tan(d*x+c)/d+1/3*tan(d*x+c)^3/d
```

Rubi [A] time = 0.02, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3473, 8}

$$\frac{\tan^3(c+dx)}{3d}-\frac{\tan(c+dx)}{d}+x$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^4,x]
```

```
[Out] x - Tan[c + d*x]/d + Tan[c + d*x]^3/(3*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \tan^4(c+dx)\,dx &= \frac{\tan^3(c+dx)}{3d}-\int \tan^2(c+dx)\,dx\\ &= -\frac{\tan(c+dx)}{d}+\frac{\tan^3(c+dx)}{3d}+\int 1\,dx\\ &= x-\frac{\tan(c+dx)}{d}+\frac{\tan^3(c+dx)}{3d}\end{aligned}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 1.36

$$\frac{\tan^{-1}(\tan(c+dx))}{d}+\frac{\tan^3(c+dx)}{3d}-\frac{\tan(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^4,x]
```

```
[Out] ArcTan[Tan[c + d*x]]/d - Tan[c + d*x]/d + Tan[c + d*x]^3/(3*d)
```

fricas [A] time = 0.60, size = 26, normalized size = 0.93

$$\frac{\tan\left(dx+c\right)^3+3\,dx-3\,\tan\left(dx+c\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4,x, algorithm="fricas")
```

```
[Out] 1/3*(tan(d*x + c)^3 + 3*d*x - 3*tan(d*x + c))/d
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x
/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)(12*d*x*tan(c)^3*tan(d*x)^3-
36*d*x*tan(c)^2*tan(d*x)^2+36*d*x*tan(c)*tan(d*x)-12*d*x-3*pi*sign(2*tan(c)
^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)^3*tan(d*x)^3+9*
pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)
^2*tan(d*x)^2-9*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*
tan(d*x))*tan(c)*tan(d*x)+3*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2
-2*tan(c)-2*tan(d*x))-3*pi*tan(c)^3*tan(d*x)^3+9*pi*tan(c)^2*tan(d*x)^2-9*p
i*tan(c)*tan(d*x)+3*pi+6*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)
^3*tan(d*x)^3-18*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^2*tan(d
*x)^2+18*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)*tan(d*x)-6*atan
((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))+6*atan((tan(c)+tan(d*x))/(tan(c)*ta
n(d*x)-1))*tan(c)^3*tan(d*x)^3-18*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1
))*tan(c)^2*tan(d*x)^2+18*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c
)*tan(d*x)-6*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))+12*tan(c)^3*tan(d*
x)^2-4*tan(c)^3+12*tan(c)^2*tan(d*x)^3-36*tan(c)^2*tan(d*x)-36*tan(c)*tan(d
*x)^2+12*tan(c)-4*tan(d*x)^3+12*tan(d*x))/(12*d*tan(c)^3*tan(d*x)^3-36*d*ta
n(c)^2*tan(d*x)^2+36*d*tan(c)*tan(d*x)-12*d)
```

maple [A] time = 0.01, size = 35, normalized size = 1.25

$$\frac{\tan^3(dx+c)}{3d} - \frac{\tan(dx+c)}{d} + \frac{dx+c}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^4,x)
[Out] 1/3*tan(d*x+c)^3/d-tan(d*x+c)/d+1/d*(d*x+c)
```

maxima [A] time = 0.72, size = 29, normalized size = 1.04

$$\frac{\tan(dx+c)^3 + 3\,dx + 3\,c - 3\,\tan(dx+c)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^4,x, algorithm="maxima")
[Out] 1/3*(tan(d*x + c)^3 + 3*d*x + 3*c - 3*tan(d*x + c))/d
```

mupad [B] time = 2.50, size = 24, normalized size = 0.86

$$x - \frac{\tan(c+d\,x) - \frac{\tan(c+d\,x)^3}{3}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x)^4,x)
[Out] x - (tan(c + d*x) - tan(c + d*x)^3/3)/d
```

sympy [A] time = 0.21, size = 27, normalized size = 0.96

$$\begin{cases} x + \frac{\tan^3(c+dx)}{3d} - \frac{\tan(c+dx)}{d} & \text{for } d \neq 0 \\ x\tan^4(c) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**4,x)
[Out] Piecewise((x + tan(c + d*x)**3/(3*d) - tan(c + d*x)/d, Ne(d, 0)), (x*tan(c)
**4, True))
```

3.5 $\int \tan^5(c+dx)\,dx$

Optimal. Leaf size=43

$$\frac{\tan^4(c+dx)}{4d}-\frac{\tan^2(c+dx)}{2d}-\frac{\log(\cos(c+dx))}{d}$$

```
[Out] -ln(cos(d*x+c))/d-1/2*tan(d*x+c)^2/d+1/4*tan(d*x+c)^4/d
```

Rubi [A] time = 0.02, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3473, 3475}

$$\frac{\tan^4(c+dx)}{4d}-\frac{\tan^2(c+dx)}{2d}-\frac{\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^5,x]
```

```
[Out] -(Log[Cos[c + d*x]]/d) - Tan[c + d*x]^2/(2*d) + Tan[c + d*x]^4/(4*d)
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \tan^5(c+dx)\,dx &= \frac{\tan^4(c+dx)}{4d}-\int \tan^3(c+dx)\,dx\\ &= -\frac{\tan^2(c+dx)}{2d}+\frac{\tan^4(c+dx)}{4d}+\int \tan(c+dx)\,dx\\ &= -\frac{\log(\cos(c+dx))}{d}-\frac{\tan^2(c+dx)}{2d}+\frac{\tan^4(c+dx)}{4d}\end{aligned}$$

Mathematica [A] time = 0.05, size = 37, normalized size = 0.86

$$-\frac{-\tan^4(c+dx)+2\tan^2(c+dx)+4\log(\cos(c+dx))}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^5,x]
```

```
[Out] -1/4*(4*Log[Cos[c + d*x]] + 2*Tan[c + d*x]^2 - Tan[c + d*x]^4)/d
```

fricas [A] time = 0.55, size = 39, normalized size = 0.91

$$\frac{\tan(dx+c)^4-2\tan(dx+c)^2-2\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^5,x, algorithm="fricas")
```

```
[Out] 1/4*(tan(d*x + c)^4 - 2*tan(d*x + c)^2 - 2*log(1/(tan(d*x + c)^2 + 1)))/d
```

giac [B] time = 6.28, size = 512, normalized size = 11.91

$$-\frac{2\log\left(\frac{4\left(\tan(dx)^4\tan(c)^2-2\tan(dx)^3\tan(c)+\tan(dx)^2\tan(c)^2+\tan(dx)^2-2\tan(dx)\tan(c)+1\right)}{\tan(c)^2+1}\right)\tan(dx)^4\tan(c)^4+3\tan(dx)^4\tan(c)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^5,x, algorithm="giac")
```

```
[Out] -1/4*(2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c
)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*tan(d*x)^4*tan(c)
^4 + 3*tan(d*x)^4*tan(c)^4 - 8*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*ta
n(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2
+ 1))*tan(d*x)^3*tan(c)^3 + 2*tan(d*x)^4*tan(c)^2 - 8*tan(d*x)^3*tan(c)^3 +
 2*tan(d*x)^2*tan(c)^4 + 12*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c
) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1
))*tan(d*x)^2*tan(c)^2 - tan(d*x)^4 - 8*tan(d*x)^3*tan(c) + 4*tan(d*x)^2*ta
n(c)^2 - 8*tan(d*x)*tan(c)^3 - tan(c)^4 - 8*log(4*(tan(d*x)^4*tan(c)^2 - 2*
tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) +
1)/(tan(c)^2 + 1))*tan(d*x)*tan(c) + 2*tan(d*x)^2 - 8*tan(d*x)*tan(c) + 2*t
an(c)^2 + 2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1)) + 3)/(d*tan(d
```

```
*x)^4*tan(c)^4 - 4*d*tan(d*x)^3*tan(c)^3 + 6*d*tan(d*x)^2*tan(c)^2 - 4*d*ta
n(d*x)*tan(c) + d)
```

maple [A] time = 0.01, size = 44, normalized size = 1.02

$$\frac{\tan^4(dx+c)}{4d} - \frac{\tan^2(dx+c)}{2d} + \frac{\ln\left(1+\tan^2(dx+c)\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^5,x)
```

```
[Out] 1/4*tan(d*x+c)^4/d-1/2*tan(d*x+c)^2/d+1/2/d*ln(1+tan(d*x+c)^2)
```

maxima [A] time = 0.48, size = 54, normalized size = 1.26

$$\frac{\frac{4\sin(dx+c)^2-3}{\sin(dx+c)^4-2\sin(dx+c)^2+1} - 2\log\left(\sin(dx+c)^2-1\right)}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^5,x, algorithm="maxima")
```

```
[Out] 1/4*((4*sin(d*x + c)^2 - 3)/(sin(d*x + c)^4 - 2*sin(d*x + c)^2 + 1) - 2*log
(sin(d*x + c)^2 - 1))/d
```

mupad [B] time = 2.50, size = 38, normalized size = 0.88

$$\frac{\frac{\ln\left(\tan(c+d\,x)^2+1\right)}{2} - \frac{\tan(c+d\,x)^2}{2} + \frac{\tan(c+d\,x)^4}{4}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x)^5,x)
```

```
[Out] (log(tan(c + d*x)^2 + 1)/2 - tan(c + d*x)^2/2 + tan(c + d*x)^4/4)/d
```

sympy [A] time = 0.34, size = 44, normalized size = 1.02

$$\begin{cases} \frac{\log\left(\tan^2(c+dx)+1\right)}{2d} + \frac{\tan^4(c+dx)}{4d} - \frac{\tan^2(c+dx)}{2d} & \text{for } d \neq 0 \\ x\tan^5(c) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**5,x)
```

```
[Out] Piecewise((log(tan(c + d*x)**2 + 1)/(2*d) + tan(c + d*x)**4/(4*d) - tan(c +
 d*x)**2/(2*d), Ne(d, 0)), (x*tan(c)**5, True))
```

3.6 $\int \tan^6(c+dx)\,dx$

Optimal. Leaf size=44

$$\frac{\tan^5(c+dx)}{5d}-\frac{\tan^3(c+dx)}{3d}+\frac{\tan(c+dx)}{d}-x$$

```
[Out] -x+tan(d*x+c)/d-1/3*tan(d*x+c)^3/d+1/5*tan(d*x+c)^5/d
```

Rubi [A] time = 0.02, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3473, 8}

$$\frac{\tan^5(c+dx)}{5d}-\frac{\tan^3(c+dx)}{3d}+\frac{\tan(c+dx)}{d}-x$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^6,x]
```

```
[Out] -x + Tan[c + d*x]/d - Tan[c + d*x]^3/(3*d) + Tan[c + d*x]^5/(5*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}
\int \tan^6(c+dx)\,dx &= \frac{\tan^5(c+dx)}{5d}-\int \tan^4(c+dx)\,dx\\
&= -\frac{\tan^3(c+dx)}{3d}+\frac{\tan^5(c+dx)}{5d}+\int \tan^2(c+dx)\,dx\\
&= \frac{\tan(c+dx)}{d}-\frac{\tan^3(c+dx)}{3d}+\frac{\tan^5(c+dx)}{5d}-\int 1\,dx\\
&= -x+\frac{\tan(c+dx)}{d}-\frac{\tan^3(c+dx)}{3d}+\frac{\tan^5(c+dx)}{5d}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 53, normalized size = 1.20

$$-\frac{\tan^{-1}(\tan(c+dx))}{d}+\frac{\tan^5(c+dx)}{5d}-\frac{\tan^3(c+dx)}{3d}+\frac{\tan(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^6,x]
```

```
[Out] -(ArcTan[Tan[c + d*x]]/d) + Tan[c + d*x]/d - Tan[c + d*x]^3/(3*d) + Tan[c +
 d*x]^5/(5*d)
```

fricas [A] time = 0.56, size = 38, normalized size = 0.86

$$\frac{3\tan(dx+c)^5-5\tan(dx+c)^3-15\,dx+15\tan(dx+c)}{15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^6,x, algorithm="fricas")
```

```
[Out] 1/15*(3*tan(d*x + c)^5 - 5*tan(d*x + c)^3 - 15*d*x + 15*tan(d*x + c))/d
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^6,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x
/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/
x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check
 sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)(-
60*d*x*tan(c)^5*tan(d*x)^5+300*d*x*tan(c)^4*tan(d*x)^4-600*d*x*tan(c)^3*tan
(d*x)^3+600*d*x*tan(c)^2*tan(d*x)^2-300*d*x*tan(c)*tan(d*x)+60*d*x-15*pi*si
gn(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)^5*ta
n(d*x)^5+75*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(
d*x))*tan(c)^4*tan(d*x)^4-150*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)
^2-2*tan(c)-2*tan(d*x))*tan(c)^3*tan(d*x)^3+150*pi*sign(2*tan(c)^2*tan(d*x)
+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)^2*tan(d*x)^2-75*pi*sign(2*
tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)*tan(d*x)+
```

```
15*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))-15*
pi*tan(c)^5*tan(d*x)^5+75*pi*tan(c)^4*tan(d*x)^4-150*pi*tan(c)^3*tan(d*x)^3
+150*pi*tan(c)^2*tan(d*x)^2-75*pi*tan(c)*tan(d*x)+15*pi+30*atan((tan(c)*tan
(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^5*tan(d*x)^5-150*atan((tan(c)*tan(d*x)-1
)/(tan(c)+tan(d*x)))*tan(c)^4*tan(d*x)^4+300*atan((tan(c)*tan(d*x)-1)/(tan(
c)+tan(d*x)))*tan(c)^3*tan(d*x)^3-300*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(
d*x)))*tan(c)^2*tan(d*x)^2+150*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*
tan(c)*tan(d*x)-30*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))+30*atan((tan
(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^5*tan(d*x)^5-150*atan((tan(c)+tan
(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^4*tan(d*x)^4+300*atan((tan(c)+tan(d*x))/
(tan(c)*tan(d*x)-1))*tan(c)^3*tan(d*x)^3-300*atan((tan(c)+tan(d*x))/(tan(c)
*tan(d*x)-1))*tan(c)^2*tan(d*x)^2+150*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*
x)-1))*tan(c)*tan(d*x)-30*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))-60*ta
n(c)^5*tan(d*x)^4+20*tan(c)^5*tan(d*x)^2-12*tan(c)^5-60*tan(c)^4*tan(d*x)^5
+300*tan(c)^4*tan(d*x)^3-100*tan(c)^4*tan(d*x)+300*tan(c)^3*tan(d*x)^4-600*
tan(c)^3*tan(d*x)^2+20*tan(c)^3+20*tan(c)^2*tan(d*x)^5-600*tan(c)^2*tan(d*x
)^3+300*tan(c)^2*tan(d*x)-100*tan(c)*tan(d*x)^4+300*tan(c)*tan(d*x)^2-60*ta
n(c)-12*tan(d*x)^5+20*tan(d*x)^3-60*tan(d*x))/(60*d*tan(c)^5*tan(d*x)^5-300
*d*tan(c)^4*tan(d*x)^4+600*d*tan(c)^3*tan(d*x)^3-600*d*tan(c)^2*tan(d*x)^2+
300*d*tan(c)*tan(d*x)-60*d)
```

maple [A] time = 0.01, size = 50, normalized size = 1.14

$$\frac{\tan^{5}(dx+c)}{5d}-\frac{\tan^{3}(dx+c)}{3d}+\frac{\tan(dx+c)}{d}-\frac{\arctan(\tan(dx+c))}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^6,x)
```

```
[Out] 1/5*tan(d*x+c)^5/d-1/3*tan(d*x+c)^3/d+tan(d*x+c)/d-1/d*arctan(tan(d*x+c))
```

maxima [A] time = 0.55, size = 41, normalized size = 0.93

$$\frac{3\,\tan(dx+c)^{5}-5\,\tan(dx+c)^{3}-15\,dx-15\,c+15\,\tan(dx+c)}{15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^6,x, algorithm="maxima")
```

```
[Out] 1/15*(3*tan(d*x + c)^5 - 5*tan(d*x + c)^3 - 15*d*x - 15*c + 15*tan(d*x + c)
)/d
```

mupad [B] time = 2.53, size = 35, normalized size = 0.80

$$\frac{\frac{\tan(c+d\,x)^{5}}{5}-\frac{\tan(c+d\,x)^{3}}{3}+\tan(c+d\,x)}{d}-x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x)^6,x)
```

```
[Out] (tan(c + d*x) - tan(c + d*x)^3/3 + tan(c + d*x)^5/5)/d - x
```

sympy [A] time = 0.46, size = 39, normalized size = 0.89

$$\begin{cases} -x + \frac{\tan^{5}{\left(c + d x \right)}}{5 d} - \frac{\tan^{3}{\left(c + d x \right)}}{3 d} + \frac{\tan{\left(c + d x \right)}}{d} & \text{for}\: d \neq 0 \\ x \tan^{6}{\left(c \right)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**6,x)
```

```
[Out] Piecewise((-x + tan(c + d*x)**5/(5*d) - tan(c + d*x)**3/(3*d) + tan(c + d*x
)/d, Ne(d, 0)), (x*tan(c)**6, True))
```

3.7 $\int \tan^7(c+dx)\,dx$

Optimal. Leaf size=57

$$\frac{\tan^6(c+dx)}{6d}-\frac{\tan^4(c+dx)}{4d}+\frac{\tan^2(c+dx)}{2d}+\frac{\log(\cos(c+dx))}{d}$$

```
[Out] ln(cos(d*x+c))/d+1/2*tan(d*x+c)^2/d-1/4*tan(d*x+c)^4/d+1/6*tan(d*x+c)^6/d
```

Rubi [A] time = 0.03, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3473, 3475}

$$\frac{\tan^6(c+dx)}{6d}-\frac{\tan^4(c+dx)}{4d}+\frac{\tan^2(c+dx)}{2d}+\frac{\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^7,x]
```

```
[Out] Log[Cos[c + d*x]]/d + Tan[c + d*x]^2/(2*d) - Tan[c + d*x]^4/(4*d) + Tan[c +
 d*x]^6/(6*d)
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \tan^7(c+dx)\,dx &= \frac{\tan^6(c+dx)}{6d}-\int \tan^5(c+dx)\,dx\\ &= -\frac{\tan^4(c+dx)}{4d}+\frac{\tan^6(c+dx)}{6d}+\int \tan^3(c+dx)\,dx\\ &= \frac{\tan^2(c+dx)}{2d}-\frac{\tan^4(c+dx)}{4d}+\frac{\tan^6(c+dx)}{6d}-\int \tan(c+dx)\,dx\\ &= \frac{\log(\cos(c+dx))}{d}+\frac{\tan^2(c+dx)}{2d}-\frac{\tan^4(c+dx)}{4d}+\frac{\tan^6(c+dx)}{6d}\end{aligned}$$

Mathematica [A] time = 0.11, size = 47, normalized size = 0.82

$$\frac{2\tan^6(c+dx)-3\tan^4(c+dx)+6\tan^2(c+dx)+12\log(\cos(c+dx))}{12d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^7,x]
```

```
[Out] (12*Log[Cos[c + d*x]] + 6*Tan[c + d*x]^2 - 3*Tan[c + d*x]^4 + 2*Tan[c + d*x
]^6)/(12*d)
```

fricas [A] time = 0.59, size = 51, normalized size = 0.89

$$\frac{2\,\tan\left(dx+c\right)^{6}-3\,\tan\left(dx+c\right)^{4}+6\,\tan\left(dx+c\right)^{2}+6\,\log\left(\frac{1}{\tan(dx+c)^{2}+1}\right)}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^7,x, algorithm="fricas")
```

```
[Out] 1/12*(2*tan(d*x + c)^6 - 3*tan(d*x + c)^4 + 6*tan(d*x + c)^2 + 6*log(1/(tan
(d*x + c)^2 + 1)))/d
```

giac [B] time = 38.70, size = 810, normalized size = 14.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^7,x, algorithm="giac")
```

```
[Out] 1/12*(6*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c
)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*tan(d*x)^6*tan(c)
^6 + 11*tan(d*x)^6*tan(c)^6 - 36*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*
tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^
2 + 1))*tan(d*x)^5*tan(c)^5 + 6*tan(d*x)^6*tan(c)^4 - 54*tan(d*x)^5*tan(c)^
5 + 6*tan(d*x)^4*tan(c)^6 + 90*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*ta
n(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2
+ 1))*tan(d*x)^4*tan(c)^4 - 3*tan(d*x)^6*tan(c)^2 - 36*tan(d*x)^5*tan(c)^3
+ 99*tan(d*x)^4*tan(c)^4 - 36*tan(d*x)^3*tan(c)^5 - 3*tan(d*x)^2*tan(c)^6 -
 120*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*tan(d*x)^3*tan(c)^3
+ 2*tan(d*x)^6 + 18*tan(d*x)^5*tan(c) + 90*tan(d*x)^4*tan(c)^2 - 72*tan(d*x
)^3*tan(c)^3 + 90*tan(d*x)^2*tan(c)^4 + 18*tan(d*x)*tan(c)^5 + 2*tan(c)^6 +
 90*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
```

```
+ tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*tan(d*x)^2*tan(c)^2 -
 3*tan(d*x)^4 - 36*tan(d*x)^3*tan(c) + 99*tan(d*x)^2*tan(c)^2 - 36*tan(d*x)
*tan(c)^3 - 3*tan(c)^4 - 36*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c
) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1
))*tan(d*x)*tan(c) + 6*tan(d*x)^2 - 54*tan(d*x)*tan(c) + 6*tan(c)^2 + 6*log
(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d
*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1)) + 11)/(d*tan(d*x)^6*tan(c)^6
 - 6*d*tan(d*x)^5*tan(c)^5 + 15*d*tan(d*x)^4*tan(c)^4 - 20*d*tan(d*x)^3*tan
(c)^3 + 15*d*tan(d*x)^2*tan(c)^2 - 6*d*tan(d*x)*tan(c) + d)
```

maple [A] time = 0.01, size = 57, normalized size = 1.00

$$\frac{\tan^{6}(dx+c)}{6d}-\frac{\tan^{4}(dx+c)}{4d}+\frac{\tan^{2}(dx+c)}{2d}-\frac{\ln\left(1+\tan^{2}(dx+c)\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^7,x)
```

```
[Out] 1/6*tan(d*x+c)^6/d-1/4*tan(d*x+c)^4/d+1/2*tan(d*x+c)^2/d-1/2/d*ln(1+tan(d*x
+c)^2)
```

maxima [A] time = 0.50, size = 74, normalized size = 1.30

$$-\frac{\frac{18\sin(dx+c)^{4}-27\sin(dx+c)^{2}+11}{\sin(dx+c)^{6}-3\sin(dx+c)^{4}+3\sin(dx+c)^{2}-1}-6\log\left(\sin(dx+c)^{2}-1\right)}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^7,x, algorithm="maxima")
```

```
[Out] -1/12*((18*sin(d*x + c)^4 - 27*sin(d*x + c)^2 + 11)/(sin(d*x + c)^6 - 3*sin
(d*x + c)^4 + 3*sin(d*x + c)^2 - 1) - 6*log(sin(d*x + c)^2 - 1))/d
```

mupad [B] time = 2.49, size = 49, normalized size = 0.86

$$-\frac{\frac{\ln\left(\tan(c+d\,x)^{2}+1\right)}{2}-\frac{\tan(c+d\,x)^{2}}{2}+\frac{\tan(c+d\,x)^{4}}{4}-\frac{\tan(c+d\,x)^{6}}{6}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x)^7,x)
```

```
[Out] -(log(tan(c + d*x)^2 + 1)/2 - tan(c + d*x)^2/2 + tan(c + d*x)^4/4 - tan(c +
 d*x)^6/6)/d
```

sympy [A] time = 0.67, size = 56, normalized size = 0.98

$$\begin{cases} -\frac{\log\left(\tan^{2}(c+dx)+1\right)}{2d} + \frac{\tan^{6}(c+dx)}{6d} - \frac{\tan^{4}(c+dx)}{4d} + \frac{\tan^{2}(c+dx)}{2d} & \text{for } d \neq 0 \\ x\tan^{7}(c) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**7,x)
```

```
[Out] Piecewise((-log(tan(c + d*x)**2 + 1)/(2*d) + tan(c + d*x)**6/(6*d) - tan(c
+ d*x)**4/(4*d) + tan(c + d*x)**2/(2*d), Ne(d, 0)), (x*tan(c)**7, True))
```

3.8 $\int \tan^8(c+dx)\,dx$

Optimal. Leaf size=58

$$\frac{\tan^7(c+dx)}{7d}-\frac{\tan^5(c+dx)}{5d}+\frac{\tan^3(c+dx)}{3d}-\frac{\tan(c+dx)}{d}+x$$

```
[Out] x-tan(d*x+c)/d+1/3*tan(d*x+c)^3/d-1/5*tan(d*x+c)^5/d+1/7*tan(d*x+c)^7/d
```

Rubi [A] time = 0.03, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3473, 8}

$$\frac{\tan^7(c+dx)}{7d}-\frac{\tan^5(c+dx)}{5d}+\frac{\tan^3(c+dx)}{3d}-\frac{\tan(c+dx)}{d}+x$$

Antiderivative was successfully verified.

```
[In] Int[Tan[c + d*x]^8,x]
```

```
[Out] x - Tan[c + d*x]/d + Tan[c + d*x]^3/(3*d) - Tan[c + d*x]^5/(5*d) + Tan[c +
d*x]^7/(7*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rubi steps

$$\begin{aligned}\int \tan^8(c+dx)\,dx &= \frac{\tan^7(c+dx)}{7d} - \int \tan^6(c+dx)\,dx\\ &= -\frac{\tan^5(c+dx)}{5d} + \frac{\tan^7(c+dx)}{7d} + \int \tan^4(c+dx)\,dx\\ &= \frac{\tan^3(c+dx)}{3d} - \frac{\tan^5(c+dx)}{5d} + \frac{\tan^7(c+dx)}{7d} - \int \tan^2(c+dx)\,dx\\ &= -\frac{\tan(c+dx)}{d} + \frac{\tan^3(c+dx)}{3d} - \frac{\tan^5(c+dx)}{5d} + \frac{\tan^7(c+dx)}{7d} + \int 1\,dx\\ &= x - \frac{\tan(c+dx)}{d} + \frac{\tan^3(c+dx)}{3d} - \frac{\tan^5(c+dx)}{5d} + \frac{\tan^7(c+dx)}{7d}\end{aligned}$$

Mathematica [A] time = 0.01, size = 68, normalized size = 1.17

$$\frac{\tan^{-1}(\tan(c+dx))}{d} + \frac{\tan^7(c+dx)}{7d} - \frac{\tan^5(c+dx)}{5d} + \frac{\tan^3(c+dx)}{3d} - \frac{\tan(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[c + d*x]^8,x]
[Out] ArcTan[Tan[c + d*x]]/d - Tan[c + d*x]/d + Tan[c + d*x]^3/(3*d) - Tan[c + d*
x]^5/(5*d) + Tan[c + d*x]^7/(7*d)
```

fricas [A] time = 0.62, size = 48, normalized size = 0.83

$$\frac{15\,\tan(dx+c)^7 - 21\,\tan(dx+c)^5 + 35\,\tan(dx+c)^3 + 105\,dx - 105\,\tan(dx+c)}{105\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^8,x, algorithm="fricas")
[Out] 1/105*(15*tan(d*x + c)^7 - 21*tan(d*x + c)^5 + 35*tan(d*x + c)^3 + 105*d*x
- 105*tan(d*x + c))/d
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^8,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x
/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/
x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check
 sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Un
able to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>
(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign
: (2*pi/x/2)>(-2*pi/x/2)(420*d*x*tan(c)^7*tan(d*x)^7-2940*d*x*tan(c)^6*tan(
d*x)^6+8820*d*x*tan(c)^5*tan(d*x)^5-14700*d*x*tan(c)^4*tan(d*x)^4+14700*d*x
*tan(c)^3*tan(d*x)^3-8820*d*x*tan(c)^2*tan(d*x)^2+2940*d*x*tan(c)*tan(d*x)-
420*d*x-105*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(
d*x))*tan(c)^7*tan(d*x)^7+735*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)
^2-2*tan(c)-2*tan(d*x))*tan(c)^6*tan(d*x)^6-2205*pi*sign(2*tan(c)^2*tan(d*x
)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)^5*tan(d*x)^5+3675*pi*sign
(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)^4*tan(
d*x)^4-3675*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(
d*x))*tan(c)^3*tan(d*x)^3+2205*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x
)^2-2*tan(c)-2*tan(d*x))*tan(c)^2*tan(d*x)^2-735*pi*sign(2*tan(c)^2*tan(d*x
)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)*tan(d*x)+105*pi*sign(2*ta
n(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))-105*pi*tan(c)^7*ta
n(d*x)^7+735*pi*tan(c)^6*tan(d*x)^6-2205*pi*tan(c)^5*tan(d*x)^5+3675*pi*tan
(c)^4*tan(d*x)^4-3675*pi*tan(c)^3*tan(d*x)^3+2205*pi*tan(c)^2*tan(d*x)^2-73
5*pi*tan(c)*tan(d*x)+105*pi+210*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))
*tan(c)^7*tan(d*x)^7-1470*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c
)^6*tan(d*x)^6+4410*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^5*ta
n(d*x)^5-7350*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^4*tan(d*x)
^4+7350*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^3*tan(d*x)^3-441
0*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^2*tan(d*x)^2+1470*atan
((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)*tan(d*x)-210*atan((tan(c)*ta
n(d*x)-1)/(tan(c)+tan(d*x)))+210*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1)
)*tan(c)^7*tan(d*x)^7-1470*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(
c)^6*tan(d*x)^6+4410*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^5*t
an(d*x)^5-7350*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^4*tan(d*x
)^4+7350*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^3*tan(d*x)^3-44
10*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^2*tan(d*x)^2+1470*ata
n((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)*tan(d*x)-210*atan((tan(c)+t
an(d*x))/(tan(c)*tan(d*x)-1))+420*tan(c)^7*tan(d*x)^6-140*tan(c)^7*tan(d*x)
^4+84*tan(c)^7*tan(d*x)^2-60*tan(c)^7+420*tan(c)^6*tan(d*x)^7-2940*tan(c)^6
*tan(d*x)^5+980*tan(c)^6*tan(d*x)^3-588*tan(c)^6*tan(d*x)-2940*tan(c)^5*tan
(d*x)^6+8820*tan(c)^5*tan(d*x)^4-2940*tan(c)^5*tan(d*x)^2+84*tan(c)^5-140*t
an(c)^4*tan(d*x)^7+8820*tan(c)^4*tan(d*x)^5-14700*tan(c)^4*tan(d*x)^3+980*t
an(c)^4*tan(d*x)+980*tan(c)^3*tan(d*x)^6-14700*tan(c)^3*tan(d*x)^4+8820*tan
```

```
(c)^3*tan(d*x)^2-140*tan(c)^3+84*tan(c)^2*tan(d*x)^7-2940*tan(c)^2*tan(d*x)
^5+8820*tan(c)^2*tan(d*x)^3-2940*tan(c)^2*tan(d*x)-588*tan(c)*tan(d*x)^6+98
0*tan(c)*tan(d*x)^4-2940*tan(c)*tan(d*x)^2+420*tan(c)-60*tan(d*x)^7+84*tan(
d*x)^5-140*tan(d*x)^3+420*tan(d*x))/(420*d*tan(c)^7*tan(d*x)^7-2940*d*tan(c
)^6*tan(d*x)^6+8820*d*tan(c)^5*tan(d*x)^5-14700*d*tan(c)^4*tan(d*x)^4+14700
*d*tan(c)^3*tan(d*x)^3-8820*d*tan(c)^2*tan(d*x)^2+2940*d*tan(c)*tan(d*x)-42
0*d)
```

maple [A] time = 0.01, size = 61, normalized size = 1.05

$$\frac{\tan^7(dx+c)}{7d} - \frac{\tan^5(dx+c)}{5d} + \frac{\tan^3(dx+c)}{3d} - \frac{\tan(dx+c)}{d} + \frac{dx+c}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(d*x+c)^8,x)
```

```
[Out] 1/7*tan(d*x+c)^7/d-1/5*tan(d*x+c)^5/d+1/3*tan(d*x+c)^3/d-tan(d*x+c)/d+1/d*(
d*x+c)
```

maxima [A] time = 0.63, size = 51, normalized size = 0.88

$$\frac{15\tan(dx+c)^7 - 21\tan(dx+c)^5 + 35\tan(dx+c)^3 + 105\,dx + 105\,c - 105\tan(dx+c)}{105\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)^8,x, algorithm="maxima")
```

```
[Out] 1/105*(15*tan(d*x + c)^7 - 21*tan(d*x + c)^5 + 35*tan(d*x + c)^3 + 105*d*x
+ 105*c - 105*tan(d*x + c))/d
```

mupad [B] time = 2.52, size = 44, normalized size = 0.76

$$x - \frac{-\frac{\tan(c+d\,x)^7}{7} + \frac{\tan(c+d\,x)^5}{5} - \frac{\tan(c+d\,x)^3}{3} + \tan(c+d\,x)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(c + d*x)^8,x)
```

```
[Out] x - (tan(c + d*x) - tan(c + d*x)^3/3 + tan(c + d*x)^5/5 - tan(c + d*x)^7/7)
/d
```

sympy [A] time = 0.92, size = 51, normalized size = 0.88

$$\begin{cases} x + \frac{\tan^7(c+dx)}{7d} - \frac{\tan^5(c+dx)}{5d} + \frac{\tan^3(c+dx)}{3d} - \frac{\tan(c+dx)}{d} & \text{for } d \neq 0 \\ x\tan^8(c) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(d*x+c)**8,x)
```

```
[Out] Piecewise((x + tan(c + d*x)**7/(7*d) - tan(c + d*x)**5/(5*d) + tan(c + d*x)
**3/(3*d) - tan(c + d*x)/d, Ne(d, 0)), (x*tan(c)**8, True))
```

3.9 $\int (b\tan(c+dx))^{7/2}\,dx$

Optimal. Leaf size=232

$$-\frac{b^{7/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d}+\frac{b^{7/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}d}-\frac{b^{7/2}\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right.}{2\sqrt{2}d}$$

```
[Out] -1/2*b^(7/2)*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)+1/2*b
^(7/2)*arctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)-1/4*b^(7/2)
*ln(b^(1/2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/2)+1/4*
b^(7/2)*ln(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/
2)-2*b^3*(b*tan(d*x+c))^(1/2)/d+2/5*b*(b*tan(d*x+c))^(5/2)/d
```

Rubi [A] time = 0.20, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{b^{7/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d}+\frac{b^{7/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}d}-\frac{2b^3\sqrt{b\tan(c+dx)}}{d}-\frac{b^{7/2}\log\left(\sqrt{b}\tan(c+dx)\right.}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(7/2),x]
```

```
[Out] -((b^(7/2)*ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d))
 + (b^(7/2)*ArcTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d)
 - (b^(7/2)*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x
]]])/(2*Sqrt[2]*d) + (b^(7/2)*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*
Sqrt[b*Tan[c + d*x]]])/(2*Sqrt[2]*d) - (2*b^3*Sqrt[b*Tan[c + d*x]])/d + (2*
b*(b*Tan[c + d*x])^(5/2))/(5*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int (b\tan(c+dx))^{7/2}\,dx = \frac{2b(b\tan(c+dx))^{5/2}}{5d} - b^2\int (b\tan(c+dx))^{3/2}\,dx$$
$$= -\frac{2b^3\sqrt{b\tan(c+dx)}}{d} + \frac{2b(b\tan(c+dx))^{5/2}}{5d} + b^4\int \frac{1}{\sqrt{b\tan(c+dx)}}\,dx$$
$$= -\frac{2b^3\sqrt{b\tan(c+dx)}}{d} + \frac{2b(b\tan(c+dx))^{5/2}}{5d} + \frac{b^5\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(b^2+x^2\right)}\,dx, x, b\tan(c+d$$
$$= -\frac{2b^3\sqrt{b\tan(c+dx)}}{d} + \frac{2b(b\tan(c+dx))^{5/2}}{5d} + \frac{\left(2b^5\right)\text{Subst}\left(\int \frac{1}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+}$$
$$= -\frac{2b^3\sqrt{b\tan(c+dx)}}{d} + \frac{2b(b\tan(c+dx))^{5/2}}{5d} + \frac{b^4\,\text{Subst}\left(\int \frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right.}{d}$$
$$= -\frac{2b^3\sqrt{b\tan(c+dx)}}{d} + \frac{2b(b\tan(c+dx))^{5/2}}{5d} - \frac{b^{7/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{b}+2x}{-b-\sqrt{2}\sqrt{b}x-x^2}\,dx, x, \sqrt{b\tan}\right.}{2\sqrt{2}\,d}$$
$$= -\frac{b^{7/2}\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}\,d} + \frac{b^{7/2}\log\left(\sqrt{b}+\sqrt{b}\tan(c+\right.}{2\sqrt{2}}$$
$$= -\frac{b^{7/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d} + \frac{b^{7/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d} - \frac{b^{7/2}\log\left(\sqrt{b}+\sqrt{b}\right.}{}$$

Mathematica [A] time = 0.39, size = 175, normalized size = 0.75

$$\frac{b^3\sqrt{b\tan(c+dx)}\left(-10\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)+10\sqrt{2}\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)+8\tan^{\frac{5}{2}}(c+dx\right.}{20d\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(7/2),x]
```

```
[Out] (b^3*Sqrt[b*Tan[c + d*x]]*(-10*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]
]] + 10*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]] - 5*Sqrt[2]*Log[1 -
```

```
Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] + 5*Sqrt[2]*Log[1 + Sqrt[2]*Sqrt
[Tan[c + d*x]] + Tan[c + d*x]] - 40*Sqrt[Tan[c + d*x]] + 8*Tan[c + d*x]^(5/
2)))/(20*d*Sqrt[Tan[c + d*x]])
```

fricas [B] time = 0.57, size = 600, normalized size = 2.59

$$-\frac{20\sqrt{2}\left(\frac{b^{14}}{d^4}\right)^{\frac{1}{4}} d \arctan\left(-\frac{b^{14}+\sqrt{2}\left(\frac{b^{14}}{d^4}\right)^{\frac{3}{4}} b^3 d^3 \sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}} - \sqrt{2}\left(\frac{b^{14}}{d^4}\right)^{\frac{3}{4}} d^3 \sqrt{\frac{b^7\sin(dx+c)+\sqrt{2}\left(\frac{b^{14}}{d^4}\right)^{\frac{1}{4}} b^3 d \sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\cos(dx+c)+\sqrt{\frac{b^{14}}{d^4}}d^2\cos(dx+}{\cos(dx+c)}}}{b^{14}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] -1/20*(20*sqrt(2)*(b^14/d^4)^(1/4)*d*arctan(-(b^14 + sqrt(2)*(b^14/d^4)^(3/
4)*b^3*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c)) - sqrt(2)*(b^14/d^4)^(3/4)*d^3
*sqrt((b^7*sin(d*x + c) + sqrt(2)*(b^14/d^4)^(1/4)*b^3*d*sqrt(b*sin(d*x + c
)/cos(d*x + c))*cos(d*x + c) + sqrt(b^14/d^4)*d^2*cos(d*x + c))/cos(d*x + c
)))/b^14)*cos(d*x + c)^2 + 20*sqrt(2)*(b^14/d^4)^(1/4)*d*arctan((b^14 - sqr
t(2)*(b^14/d^4)^(3/4)*b^3*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c)) + sqrt(2)*(
b^14/d^4)^(3/4)*d^3*sqrt((b^7*sin(d*x + c) - sqrt(2)*(b^14/d^4)^(1/4)*b^3*d
*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c) + sqrt(b^14/d^4)*d^2*cos(d*
x + c))/cos(d*x + c)))/b^14)*cos(d*x + c)^2 - 5*sqrt(2)*(b^14/d^4)^(1/4)*d*
cos(d*x + c)^2*log((b^7*sin(d*x + c) + sqrt(2)*(b^14/d^4)^(1/4)*b^3*d*sqrt(
b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c) + sqrt(b^14/d^4)*d^2*cos(d*x + c)
)/cos(d*x + c)) + 5*sqrt(2)*(b^14/d^4)^(1/4)*d*cos(d*x + c)^2*log((b^7*sin(
d*x + c) - sqrt(2)*(b^14/d^4)^(1/4)*b^3*d*sqrt(b*sin(d*x + c)/cos(d*x + c))
*cos(d*x + c) + sqrt(b^14/d^4)*d^2*cos(d*x + c))/cos(d*x + c)) + 8*(6*b^3*c
os(d*x + c)^2 - b^3)*sqrt(b*sin(d*x + c)/cos(d*x + c)))/(d*cos(d*x + c)^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.07, size = 200, normalized size = 0.86

$$\frac{2b\left(b\tan\left(dx+c\right)\right)^{\frac{5}{2}}}{5d}-\frac{2b^{3}\sqrt{b\tan\left(dx+c\right)}}{d}+\frac{b^{3}\left(b^{2}\right)^{\frac{1}{4}}\sqrt{2}\ \arctan\left(\frac{\sqrt{2}\ \sqrt{b\tan(dx+c)}}{\left(b^{2}\right)^{\frac{1}{4}}}+1\right)}{2d}-\frac{b^{3}\left(b^{2}\right)^{\frac{1}{4}}\sqrt{2}\ \arctan\left(-\frac{\sqrt{2}}{\cdots}\right.}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^(7/2),x)
```

```
[Out] 2/5*b*(b*tan(d*x+c))^(5/2)/d-2*b^3*(b*tan(d*x+c))^(1/2)/d+1/2/d*b^3*(b^2)^(
1/4)*2^(1/2)*arctan(2^(1/2)/(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)-1/2/d*b^3*(
b^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)+1/4/
d*b^3*(b^2)^(1/4)*2^(1/2)*ln((b*tan(d*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)
*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)-(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2
)+(b^2)^(1/2)))
```

maxima [A] time = 0.80, size = 186, normalized size = 0.80

$$\frac{10\sqrt{2}\,b^{\frac{9}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\ \sqrt{b}+2\ \sqrt{b\tan(dx+c)}\right)}{2\ \sqrt{b}}\right)+10\sqrt{2}\,b^{\frac{9}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\ \sqrt{b}-2\ \sqrt{b\tan(dx+c)}\right)}{2\ \sqrt{b}}\right)+5\sqrt{2}\,b^{\frac{9}{2}}\log\left(b\tan\left(d\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] 1/20*(10*sqrt(2)*b^(9/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan
(d*x + c)))/sqrt(b)) + 10*sqrt(2)*b^(9/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt
(b) - 2*sqrt(b*tan(d*x + c)))/sqrt(b)) + 5*sqrt(2)*b^(9/2)*log(b*tan(d*x +
c) + sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b) - 5*sqrt(2)*b^(9/2)*log(b*ta
n(d*x + c) - sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b) + 8*(b*tan(d*x + c))
^(5/2)*b^2 - 40*sqrt(b*tan(d*x + c))*b^4)/(b*d)
```

mupad [B] time = 3.18, size = 93, normalized size = 0.40

$$\frac{2\,b\,\left(b\tan\left(c+d\,x\right)\right)^{5/2}}{5\,d}-\frac{2\,b^{3}\,\sqrt{b\tan\left(c+d\,x\right)}}{d}-\frac{\left(-1\right)^{1/4}\,b^{7/2}\,\mathrm{atan}\left(\frac{\left(-1\right)^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)\,1\mathrm{i}}{d}-\frac{\left(-1\right)^{1/4}\,b^{7/2}\,\mathrm{atan}\left(\frac{\left(-1\right)^{1/4}\,\sqrt{b}\cdots}{\cdots}\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^(7/2),x)
```

```
[Out] (2*b*(b*tan(c + d*x))^(5/2))/(5*d) - (2*b^3*(b*tan(c + d*x))^(1/2))/d - ((-
1)^(1/4)*b^(7/2)*atan(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2))*1i)/d -
((-1)^(1/4)*b^(7/2)*atan(((-1)^(1/4)*(b*tan(c + d*x))^(1/2)*1i)/b^(1/2)))/d
```

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

$$\int (b\tan(c+dx))^{\frac{7}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**(7/2),x)
```

```
[Out] Integral((b*tan(c + d*x))**(7/2), x)
```

3.10 $\int (b\tan(c+dx))^{5/2}\,dx$

Optimal. Leaf size=212

$$\frac{b^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d}-\frac{b^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}d}-\frac{b^{5/2}\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\right.}{2\sqrt{2}d}$$

```
[Out] 1/2*b^(5/2)*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)-1/2*b^
(5/2)*arctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)-1/4*b^(5/2)*
ln(b^(1/2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/2)+1/4*b
^(5/2)*ln(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/2
)+2/3*b*(b*tan(d*x+c))^(3/2)/d
```

Rubi [A] time = 0.14, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{b^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d}-\frac{b^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}d}-\frac{b^{5/2}\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\right.}{2\sqrt{2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(5/2),x]
```

```
[Out] (b^(5/2)*ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d) -
(b^(5/2)*ArcTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d) -
(b^(5/2)*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x]]]
)/(2*Sqrt[2]*d) + (b^(5/2)*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*Sqr
t[b*Tan[c + d*x]]])/(2*Sqrt[2]*d) + (2*b*(b*Tan[c + d*x])^(3/2))/(3*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

```
IntegerQ[n]
```

Rubi steps

$$\int (b\tan(c+dx))^{5/2}\,dx = \frac{2b(b\tan(c+dx))^{3/2}}{3d} - b^2\int\sqrt{b\tan(c+dx)}\,dx$$

$$= \frac{2b(b\tan(c+dx))^{3/2}}{3d} - \frac{b^3\,\text{Subst}\left(\int\frac{\sqrt{x}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{d}$$

$$= \frac{2b(b\tan(c+dx))^{3/2}}{3d} - \frac{\left(2b^3\right)\text{Subst}\left(\int\frac{x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d}$$

$$= \frac{2b(b\tan(c+dx))^{3/2}}{3d} + \frac{b^3\,\text{Subst}\left(\int\frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d} - \frac{b^3\,\text{Subst}\left(\int\frac{b+x^2}{b^2+x^4}\,dx \ldots\right.}{\ldots}$$

$$= \frac{2b(b\tan(c+dx))^{3/2}}{3d} - \frac{b^{5/2}\,\text{Subst}\left(\int\frac{\sqrt{2}\sqrt{b}+2x}{-b-\sqrt{2}\sqrt{b}x-x^2}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}d} - \frac{b^{5/2}\,\text{Subst}\ldots}{\ldots}$$

$$= -\frac{b^{5/2}\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}d} + \frac{b^{5/2}\log\left(\sqrt{b}+\sqrt{b}\tan(c+\ldots\right.}{2\sqrt{2}\ldots}$$

$$= \frac{b^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d} - \frac{b^{5/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d} - \frac{b^{5/2}\log\left(\sqrt{b}+\sqrt{b}\,\text{t}\ldots\right.}{\ldots}$$

Mathematica [C] time = 0.07, size = 40, normalized size = 0.19

$$-\frac{2b(b\tan(c+dx))^{3/2}\left({}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\tan^2(c+dx)\right)-1\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(5/2),x]
```

```
[Out] (-2*b*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Tan[c + d*x]^2])*(b*Tan[c + d*x
])^(3/2))/(3*d)
```

fricas [B] time = 0.64, size = 594, normalized size = 2.80

$$12\sqrt{2}\left(\frac{b^{10}}{d^4}\right)^{\frac{1}{4}} d \arctan\left(-\frac{b^{10}+\sqrt{2}\left(\frac{b^{10}}{d^4}\right)^{\frac{1}{4}} b^7 d\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}-\sqrt{2}\left(\frac{b^{10}}{d^4}\right)^{\frac{1}{4}} d\sqrt{\frac{b^{15}\sin(dx+c)+\sqrt{\frac{b^{10}}{d^4}}\,b^{10}d^2\cos(dx+c)+\sqrt{2}\left(\frac{b^{10}}{d^4}\right)^{\frac{3}{4}} b^7 d^3\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\cos(dx\cdots}{\cos(dx+c)}}}{b^{10}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*sqrt(2)*(b^10/d^4)^(1/4)*d*arctan(-(b^10 + sqrt(2)*(b^10/d^4)^(1/4
)*b^7*d*sqrt(b*sin(d*x + c)/cos(d*x + c)) - sqrt(2)*(b^10/d^4)^(1/4)*d*sqrt
((b^15*sin(d*x + c) + sqrt(b^10/d^4)*b^10*d^2*cos(d*x + c) + sqrt(2)*(b^10/
d^4)^(3/4)*b^7*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c))/cos(d*x
+ c)))/b^10)*cos(d*x + c) + 12*sqrt(2)*(b^10/d^4)^(1/4)*d*arctan((b^10 - sq
rt(2)*(b^10/d^4)^(1/4)*b^7*d*sqrt(b*sin(d*x + c)/cos(d*x + c)) + sqrt(2)*(b
^10/d^4)^(1/4)*d*sqrt((b^15*sin(d*x + c) + sqrt(b^10/d^4)*b^10*d^2*cos(d*x
+ c) - sqrt(2)*(b^10/d^4)^(3/4)*b^7*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*c
os(d*x + c))/cos(d*x + c)))/b^10)*cos(d*x + c) + 3*sqrt(2)*(b^10/d^4)^(1/4)
*d*cos(d*x + c)*log((b^15*sin(d*x + c) + sqrt(b^10/d^4)*b^10*d^2*cos(d*x +
c) + sqrt(2)*(b^10/d^4)^(3/4)*b^7*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos
(d*x + c))/cos(d*x + c)) - 3*sqrt(2)*(b^10/d^4)^(1/4)*d*cos(d*x + c)*log((b
^15*sin(d*x + c) + sqrt(b^10/d^4)*b^10*d^2*cos(d*x + c) - sqrt(2)*(b^10/d^4
)^(3/4)*b^7*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c))/cos(d*x + c
)) + 8*b^2*sqrt(b*sin(d*x + c)/cos(d*x + c))*sin(d*x + c))/(d*cos(d*x + c))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 182, normalized size = 0.86

$$\frac{2b\left(b\tan(dx+c)\right)^{\frac{3}{2}}}{3d}-\frac{b^3\sqrt{2}\,\ln\left(\frac{b\tan(dx+c)-\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}{b\tan(dx+c)+\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}\right)}{4d\left(b^2\right)^{\frac{1}{4}}}-\frac{b^3\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^2\right)^{\frac{1}{4}}}+1\right)}{2d\left(b^2\right)^{\frac{1}{4}}}+\frac{b^3\sqrt{2}\,\mathrm{ar}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^(5/2),x)
```

```
[Out] 2/3*b*(b*tan(d*x+c))^(3/2)/d-1/4/d*b^3/(b^2)^(1/4)*2^(1/2)*ln((b*tan(d*x+c)
-(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)+(b^2)^
(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2)))-1/2/d*b^3/(b^2)^(1/4)*2^(1
/2)*arctan(2^(1/2)/(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)+1/2/d*b^3/(b^2)^(1/4
)*2^(1/2)*arctan(-2^(1/2)/(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)
```

maxima [A] time = 0.66, size = 176, normalized size = 0.83

$$-\frac{3\,b^4\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{b}+2\,\sqrt{b\tan(dx+c)}\right)}{2\,\sqrt{b}}\right)}{\sqrt{b}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{b}-2\,\sqrt{b\tan(dx+c)}\right)}{2\,\sqrt{b}}\right)}{\sqrt{b}}-\frac{\sqrt{2}\,\log\left(b\tan(dx+c)+\sqrt{2}\,\sqrt{b\tan(dx+c)}\,\sqrt{b}+b\right)}{\sqrt{b}}+\cdots\right.}{12\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*b^4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan(
d*x + c)))/sqrt(b))/sqrt(b) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(b
) - 2*sqrt(b*tan(d*x + c)))/sqrt(b))/sqrt(b) - sqrt(2)*log(b*tan(d*x + c) +
 sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b) + sqrt(2)*log(b*tan(d*x
+ c) - sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b)) - 8*(b*tan(d*x +
c))^(3/2)*b^2)/(b*d)
```

mupad [B] time = 2.79, size = 74, normalized size = 0.35

$$\frac{2\,b\,{\left(b\,\tan\left(c+d\,x\right)\right)}^{3/2}}{3\,d}-\frac{{\left(-1\right)}^{1/4}\,b^{5/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{b\,\tan\left(c+d\,x\right)}}{\sqrt{b}}\right)}{d}+\frac{{\left(-1\right)}^{1/4}\,b^{5/2}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{b\,\tan\left(c+d\,x\right)}}{\sqrt{b}}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^(5/2),x)
```

```
[Out] (2*b*(b*tan(c + d*x))^(3/2))/(3*d) - ((-1)^(1/4)*b^(5/2)*atan(((-1)^(1/4)*(
b*tan(c + d*x))^(1/2))/b^(1/2)))/d + ((-1)^(1/4)*b^(5/2)*atanh(((-1)^(1/4)*
(b*tan(c + d*x))^(1/2))/b^(1/2)))/d
```

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

$$\int \left(b\tan\left(c+dx\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**(5/2),x)
[Out] Integral((b*tan(c + d*x))**(5/2), x)
```

3.11 $\int (b\tan(c+dx))^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d}-\frac{b^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,d}+\frac{b^{3/2}\log\left(\sqrt{b}\,\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\right.}{2\sqrt{2}\,d}$$

```
[Out] 1/2*b^(3/2)*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)-1/2*b^
(3/2)*arctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)+1/4*b^(3/2)*
ln(b^(1/2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/2)-1/4*b
^(3/2)*ln(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/2
)+2*b*(b*tan(d*x+c))^(1/2)/d
```

Rubi [A] time = 0.15, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{b^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d}-\frac{b^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,d}+\frac{b^{3/2}\log\left(\sqrt{b}\,\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\right.}{2\sqrt{2}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(3/2),x]
```

```
[Out] (b^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d) -
(b^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d) +
(b^(3/2)*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x]]]
)/(2*Sqrt[2]*d) - (b^(3/2)*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*Sqr
t[b*Tan[c + d*x]]])/(2*Sqrt[2]*d) + (2*b*Sqrt[b*Tan[c + d*x]])/d
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

```
IntegerQ[n]
```

Rubi steps

$$\int (b\tan(c+dx))^{3/2}\,dx = \frac{2b\sqrt{b\tan(c+dx)}}{d} - b^2\int \frac{1}{\sqrt{b\tan(c+dx)}}\,dx$$

$$= \frac{2b\sqrt{b\tan(c+dx)}}{d} - \frac{b^3\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\,(b^2+x^2)}\,dx, x, b\tan(c+dx)\right)}{d}$$

$$= \frac{2b\sqrt{b\tan(c+dx)}}{d} - \frac{(2b^3)\,\mathrm{Subst}\left(\int \frac{1}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d}$$

$$= \frac{2b\sqrt{b\tan(c+dx)}}{d} - \frac{b^2\,\mathrm{Subst}\left(\int \frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d} - \frac{b^2\,\mathrm{Subst}\left(\int \frac{b+x^2}{b^2+x^4}\,dx, \ldots\right.}{d}$$

$$= \frac{2b\sqrt{b\tan(c+dx)}}{d} + \frac{b^{3/2}\,\mathrm{Subst}\left(\int \frac{\sqrt{2}\sqrt{b}+2x}{-b-\sqrt{2}\sqrt{b}\,x-x^2}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}\,d} + \frac{b^{3/2}\,\mathrm{Subst}\left(\ldots\right.}{}$$

$$= \frac{b^{3/2}\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}\,d} - \frac{b^{3/2}\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx\ldots\right.}{2\sqrt{2}\,d\ldots}$$

$$= \frac{b^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d} - \frac{b^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d} + \frac{b^{3/2}\log\left(\sqrt{b}+\sqrt{b}\,\mathrm{t}\ldots\right.}{}$$

Mathematica [A] time = 0.17, size = 159, normalized size = 0.76

$$\frac{(b\tan(c+dx))^{3/2}\left(2\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-2\sqrt{2}\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)+8\sqrt{\tan(c+dx)}+\ldots\right.}{4d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(3/2),x]
```

```
[Out] ((2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - 2*Sqrt[2]*ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]] + Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + T
an[c + d*x]] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] +
 8*Sqrt[Tan[c + d*x]])*(b*Tan[c + d*x])^(3/2))/(4*d*Tan[c + d*x]^(3/2))
```

fricas [B] time = 1.39, size = 533, normalized size = 2.54

$$\frac{4\sqrt{2}\left(\frac{b^6}{d^4}\right)^{\frac{1}{4}} d \arctan\left(-\frac{b^6+\sqrt{2}\left(\frac{b^6}{d^4}\right)^{\frac{3}{4}} b d^3 \sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}-\sqrt{2}\left(\frac{b^6}{d^4}\right)^{\frac{3}{4}} d^3 \sqrt{\frac{\sqrt{2}\left(\frac{b^6}{d^4}\right)^{\frac{1}{4}} b d \sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\cos(dx+c)+b^3\sin(dx+c)+\sqrt{\frac{b^6}{d^4}} d^2\cos(dx+c)}{\cos(dx+c)}}}{b^6}\right)+4\sqrt{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*(b^6/d^4)^(1/4)*d*arctan(-(b^6 + sqrt(2)*(b^6/d^4)^(3/4)*b*d
^3*sqrt(b*sin(d*x + c)/cos(d*x + c)) - sqrt(2)*(b^6/d^4)^(3/4)*d^3*sqrt((sq
rt(2)*(b^6/d^4)^(1/4)*b*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c) +
b^3*sin(d*x + c) + sqrt(b^6/d^4)*d^2*cos(d*x + c))/cos(d*x + c)))/b^6) + 4*
sqrt(2)*(b^6/d^4)^(1/4)*d*arctan((b^6 - sqrt(2)*(b^6/d^4)^(3/4)*b*d^3*sqrt(
b*sin(d*x + c)/cos(d*x + c)) + sqrt(2)*(b^6/d^4)^(3/4)*d^3*sqrt(-(sqrt(2)*(
b^6/d^4)^(1/4)*b*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - b^3*sin
(d*x + c) - sqrt(b^6/d^4)*d^2*cos(d*x + c))/cos(d*x + c)))/b^6) - sqrt(2)*(
b^6/d^4)^(1/4)*d*log((sqrt(2)*(b^6/d^4)^(1/4)*b*d*sqrt(b*sin(d*x + c)/cos(d
*x + c))*cos(d*x + c) + b^3*sin(d*x + c) + sqrt(b^6/d^4)*d^2*cos(d*x + c))/
cos(d*x + c)) + sqrt(2)*(b^6/d^4)^(1/4)*d*log(-(sqrt(2)*(b^6/d^4)^(1/4)*b*d
*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c) - b^3*sin(d*x + c) - sqrt(b
^6/d^4)*d^2*cos(d*x + c))/cos(d*x + c)) + 8*b*sqrt(b*sin(d*x + c)/cos(d*x +
 c)))/d
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 176, normalized size = 0.84

$$\frac{2b\sqrt{b\tan(dx+c)}}{d}-\frac{b\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\arctan\left(\frac{\sqrt{2}\sqrt{b\tan(dx+c)}}{\left(b^2\right)^{\frac{1}{4}}}+1\right)}{2d}+\frac{b\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\arctan\left(-\frac{\sqrt{2}\sqrt{b\tan(dx+c)}}{\left(b^2\right)^{\frac{1}{4}}}+1\right)}{2d}-\frac{b\left(b^2\right)^{\frac{1}{4}}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^(3/2),x)
```

```
[Out] 2*b*(b*tan(d*x+c))^(1/2)/d-1/2/d*b*(b^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(b^2)
^(1/4)*(b*tan(d*x+c))^(1/2)+1)+1/2/d*b*(b^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/
(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)-1/4/d*b*(b^2)^(1/4)*2^(1/2)*ln((b*tan(d
*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)-(
b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2)))
```

maxima [**A**] time = 0.57, size = 170, normalized size = 0.81

$$-\frac{2\sqrt{2}\,b^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)+2\sqrt{2}\,b^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)+\sqrt{2}\,b^{\frac{5}{2}}\log\left(b\tan(dx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*b^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan(
d*x + c)))/sqrt(b)) + 2*sqrt(2)*b^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(b
) - 2*sqrt(b*tan(d*x + c)))/sqrt(b)) + sqrt(2)*b^(5/2)*log(b*tan(d*x + c) +
 sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b) - sqrt(2)*b^(5/2)*log(b*tan(d*x
+ c) - sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b) - 8*sqrt(b*tan(d*x + c))*b
^2)/(b*d)
```

mupad [**B**] time = 2.74, size = 73, normalized size = 0.35

$$\frac{2\,b\,\sqrt{b\tan\left(c+d\,x\right)}}{d}+\frac{{\left(-1\right)}^{1/4}\,b^{3/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)\,1{}\mathrm{i}}{d}+\frac{{\left(-1\right)}^{1/4}\,b^{3/2}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)\,1{}\mathrm{i}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^(3/2),x)
```

```
[Out] (2*b*(b*tan(c + d*x))^(1/2))/d + ((-1)^(1/4)*b^(3/2)*atan(((-1)^(1/4)*(b*ta
n(c + d*x))^(1/2))/b^(1/2))*1i)/d + ((-1)^(1/4)*b^(3/2)*atanh(((-1)^(1/4)*(
b*tan(c + d*x))^(1/2))/b^(1/2))*1i)/d
```

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

$$\int\left(b\tan\left(c+dx\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x))**(3/2), x)
```

3.12 $\int \sqrt{b\tan(c+dx)}\,dx$

Optimal. Leaf size=192

$$-\frac{\sqrt{b}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d}+\frac{\sqrt{b}\,\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,d}+\frac{\sqrt{b}\,\log\left(\sqrt{b}\,\tan(c+dx)-\sqrt{2}\,\sqrt{b\tan(c+dx)}+\right.}{2\sqrt{2}\,d}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))*b^(1/2)/d*2^(1/2)+1/2*a
rctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))*b^(1/2)/d*2^(1/2)+1/4*ln(b^(1
/2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))*b^(1/2)/d*2^(1/2)-1/4*
ln(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))*b^(1/2)/d*2^(1/
2)
```

Rubi [A] time = 0.12, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt{b}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,d}+\frac{\sqrt{b}\,\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,d}+\frac{\sqrt{b}\,\log\left(\sqrt{b}\,\tan(c+dx)-\sqrt{2}\,\sqrt{b\tan(c+dx)}+\right.}{2\sqrt{2}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[c + d*x]],x]
```

```
[Out] -((Sqrt[b]*ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d))
 + (Sqrt[b]*ArcTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]])/(Sqrt[2]*d)
 + (Sqrt[b]*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x
]]])/(2*Sqrt[2]*d) - (Sqrt[b]*Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*
Sqrt[b*Tan[c + d*x]]])/(2*Sqrt[2]*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \sqrt{b\tan(c+dx)}\,dx = \frac{b\,\text{Subst}\left(\int \frac{\sqrt{x}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{d}$$
$$= \frac{(2b)\,\text{Subst}\left(\int \frac{x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d}$$
$$= -\frac{b\,\text{Subst}\left(\int \frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d} + \frac{b\,\text{Subst}\left(\int \frac{b+x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d}$$
$$= \frac{\sqrt{b}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{b}+2x}{-b-\sqrt{2}\sqrt{b}x-x^2}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}d} + \frac{\sqrt{b}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{b}-2x}{-b+\sqrt{2}\sqrt{b}x-x^2}\,dx, x, \sqrt{b\right.}}{2\sqrt{2}d}$$
$$= \frac{\sqrt{b}\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}d} - \frac{\sqrt{b}\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)+\right.}{2\sqrt{2}d}$$
$$= -\frac{\sqrt{b}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d} + \frac{\sqrt{b}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}d} + \frac{\sqrt{b}\log\left(\sqrt{b}+\sqrt{b}\tan\right.}{}$$

Mathematica [C] time = 0.04, size = 40, normalized size = 0.21

$$\frac{2(b\tan(c+dx))^{3/2}\,{}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\tan^2(c+dx)\right)}{3bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[c + d*x]],x]
[Out] (2*Hypergeometric2F1[3/4, 1, 7/4, -Tan[c + d*x]^2]*(b*Tan[c + d*x])^(3/2))/
(3*b*d)
```

fricas [B] time = 0.68, size = 519, normalized size = 2.70

$$-\sqrt{2}\left(\frac{b^2}{d^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}bd\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\left(\frac{b^2}{d^4}\right)^{\frac{1}{4}} - \sqrt{2}d\sqrt{\frac{\sqrt{2}bd^3\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\left(\frac{b^2}{d^4}\right)^{\frac{3}{4}}\cos(dx+c)+b^2d^2\sqrt{\frac{b^2}{d^4}}\cos(dx+c)+b^3\sin(dx+c)}{\cos(dx+c)}}}{b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] -sqrt(2)*(b^2/d^4)^(1/4)*arctan(-(sqrt(2)*b*d*sqrt(b*sin(d*x + c)/cos(d*x +
 c))*(b^2/d^4)^(1/4) - sqrt(2)*d*sqrt((sqrt(2)*b*d^3*sqrt(b*sin(d*x + c)/co
s(d*x + c))*(b^2/d^4)^(3/4)*cos(d*x + c) + b^2*d^2*sqrt(b^2/d^4)*cos(d*x +
c) + b^3*sin(d*x + c))/cos(d*x + c))*(b^2/d^4)^(1/4) + b^2)/b^2) - sqrt(2)*
(b^2/d^4)^(1/4)*arctan(-(sqrt(2)*b*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(b^2
/d^4)^(1/4) - sqrt(2)*d*sqrt(-(sqrt(2)*b*d^3*sqrt(b*sin(d*x + c)/cos(d*x +
c))*(b^2/d^4)^(3/4)*cos(d*x + c) - b^2*d^2*sqrt(b^2/d^4)*cos(d*x + c) - b^3
*sin(d*x + c))/cos(d*x + c))*(b^2/d^4)^(1/4) - b^2)/b^2) - 1/4*sqrt(2)*(b^2
/d^4)^(1/4)*log((sqrt(2)*b*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(b^2/d^4)^
(3/4)*cos(d*x + c) + b^2*d^2*sqrt(b^2/d^4)*cos(d*x + c) + b^3*sin(d*x + c))
/cos(d*x + c)) + 1/4*sqrt(2)*(b^2/d^4)^(1/4)*log(-(sqrt(2)*b*d^3*sqrt(b*sin
(d*x + c)/cos(d*x + c))*(b^2/d^4)^(3/4)*cos(d*x + c) - b^2*d^2*sqrt(b^2/d^4
)*cos(d*x + c) - b^3*sin(d*x + c))/cos(d*x + c))
```

giac [A] time = 0.52, size = 176, normalized size = 0.92

$$\frac{\frac{2\sqrt{2}|b|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|b|}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{|b|}}\right)}{d}+\frac{2\sqrt{2}|b|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|b|}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{|b|}}\right)}{d}-\frac{\sqrt{2}|b|^{\frac{3}{2}}\log\left(b\tan(dx+c)+\sqrt{2}\sqrt{b\tan(dx+c)}\sqrt{|b|}\right.}{d}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(2*sqrt(2)*abs(b)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(b)) + 2*sq
rt(b*tan(d*x + c)))/sqrt(abs(b)))/d + 2*sqrt(2)*abs(b)^(3/2)*arctan(-1/2*sq
rt(2)*(sqrt(2)*sqrt(abs(b)) - 2*sqrt(b*tan(d*x + c)))/sqrt(abs(b)))/d - sqr
t(2)*abs(b)^(3/2)*log(b*tan(d*x + c) + sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(ab
s(b)) + abs(b))/d + sqrt(2)*abs(b)^(3/2)*log(b*tan(d*x + c) - sqrt(2)*sqrt(
b*tan(d*x + c))*sqrt(abs(b)) + abs(b))/d)/b
```

maple [A] time = 0.07, size = 160, normalized size = 0.83

$$\frac{b\sqrt{2}\,\ln\left(\frac{b\tan(dx+c)-\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^{2}}}{b\tan(dx+c)+\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^{2}}}\right)}{4d\left(b^{2}\right)^{\frac{1}{4}}}+\frac{b\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^{2}\right)^{\frac{1}{4}}}+1\right)}{2d\left(b^{2}\right)^{\frac{1}{4}}}-\frac{b\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^{2}\right)^{\frac{1}{4}}}\right.}{2d\left(b^{2}\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/4/d*b/(b^2)^(1/4)*2^(1/2)*ln((b*tan(d*x+c)-(b^2)^(1/4)*(b*tan(d*x+c))^(1/
2)*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1
```

```
/2)+(b^2)^(1/2)))+1/2/d*b/(b^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(b^2)^(1/4)*(b
*tan(d*x+c))^(1/2)+1)-1/2/d*b/(b^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(b^2)^(1/
4)*(b*tan(d*x+c))^(1/2)+1)
```

maxima [A] time = 0.43, size = 153, normalized size = 0.80

$$\frac{b\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{\sqrt{b}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{\sqrt{b}}-\frac{\sqrt{2}\log\left(b\tan(dx+c)+\sqrt{2}\sqrt{b\tan(dx+c)}\sqrt{b}+b\right)}{\sqrt{b}}+\frac{\sqrt{2}\log\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*b*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan(d*x + c
)))/sqrt(b))/sqrt(b) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(b) - 2*s
qrt(b*tan(d*x + c)))/sqrt(b))/sqrt(b) - sqrt(2)*log(b*tan(d*x + c) + sqrt(2
)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b) + sqrt(2)*log(b*tan(d*x + c) -
sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b))/d
```

mupad [B] time = 2.62, size = 49, normalized size = 0.26

$$\frac{(-1)^{1/4}\sqrt{b}\left(\operatorname{atan}\left(\frac{(-1)^{1/4}\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)-\operatorname{atanh}\left(\frac{(-1)^{1/4}\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^(1/2),x)
```

```
[Out] ((-1)^(1/4)*b^(1/2)*(atan(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2)) - at
anh(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2))))/d
```

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

$$\int \sqrt{b\tan(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral(sqrt(b*tan(c + d*x)), x)
```

3.13 $\int \frac{1}{\sqrt{b\tan(c+dx)}}\,dx$

Optimal. Leaf size=192

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\sqrt{b}\,d}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\sqrt{b}\,d}-\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\sqrt{b}\right)}{2\sqrt{2}\sqrt{b}\,d}+\frac{\log}{}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)/b^(1/2)+1/2*a
rctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/d*2^(1/2)/b^(1/2)-1/4*ln(b^(1
/2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/2)/b^(1/2)+1/4*
ln(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/d*2^(1/2)/b^(1/
2)
```

Rubi [A] time = 0.12, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\sqrt{b}\,d}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\sqrt{b}\,d}-\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\sqrt{b}\right)}{2\sqrt{2}\sqrt{b}\,d}+\frac{\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[b*Tan[c + d*x]],x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*Sqrt[b]*d)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*Sqrt[b]*d) - L
og[Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x]]]/(2*Sqrt[2
]*Sqrt[b]*d) + Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*Sqrt[b*Tan[c +
d*x]]]/(2*Sqrt[2]*Sqrt[b]*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{\sqrt{b\tan(c+dx)}}\,dx = \frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(b^2+x^2)}\,dx, x, b\tan(c+dx)\right)}{d}$$

$$= \frac{(2b)\,\text{Subst}\left(\int \frac{1}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d} + \frac{\text{Subst}\left(\int \frac{b+x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{d}$$

$$= \frac{\text{Subst}\left(\int \frac{1}{b-\sqrt{2}\sqrt{b}x+x^2}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{2d} + \frac{\text{Subst}\left(\int \frac{1}{b+\sqrt{2}\sqrt{b}x+x^2}\,dx, x, \sqrt{b\tan(c+\right.}{2d}$$

$$= -\frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}\sqrt{b}\,d} + \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)+\sqrt{2}\right.}{2\sqrt{2}\sqrt{b}\,d}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\sqrt{b}\,d} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\sqrt{b}\,d} - \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)\right.}{2\sqrt{2}\sqrt{b}}$$

Mathematica [A] time = 0.11, size = 131, normalized size = 0.68

$$\frac{\sqrt{\tan(c+dx)}\left(-2\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)+2\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)-\log\left(\tan(c+dx)-\sqrt{2}\sqrt{\tan}\right.\right.}{2\sqrt{2}\,d\sqrt{b\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[b*Tan[c + d*x]],x]
```

```
[Out] ((-2*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] + 2*ArcTan[1 + Sqrt[2]*Sqrt[Tan
[c + d*x]]] - Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] + Log[1 +
Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]])*Sqrt[Tan[c + d*x]])/(2*Sqrt[2]*
d*Sqrt[b*Tan[c + d*x]])
```

fricas [B] time = 1.01, size = 493, normalized size = 2.57

$$-\sqrt{2}\left(\frac{1}{b^2d^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,bd^3\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\left(\frac{1}{b^2d^4}\right)^{\frac{3}{4}}+\sqrt{2}\,bd^3\sqrt{\frac{b^2d^2\sqrt{\frac{1}{b^2d^4}}\cos(dx+c)+\sqrt{2}\,bd\sqrt{\frac{b\sin(dx+c}{\cos(dx+c)}}}{\cos(dx-}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] -sqrt(2)*(1/(b^2*d^4))^(1/4)*arctan(-sqrt(2)*b*d^3*sqrt(b*sin(d*x + c)/cos(
d*x + c))*(1/(b^2*d^4))^(3/4) + sqrt(2)*b*d^3*sqrt((b^2*d^2*sqrt(1/(b^2*d^4
))*cos(d*x + c) + sqrt(2)*b*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^2*d^4
))^(1/4)*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/(b^2*d^4))^(3/4) -
 1) - sqrt(2)*(1/(b^2*d^4))^(1/4)*arctan(-sqrt(2)*b*d^3*sqrt(b*sin(d*x + c)
/cos(d*x + c))*(1/(b^2*d^4))^(3/4) + sqrt(2)*b*d^3*sqrt((b^2*d^2*sqrt(1/(b^
2*d^4))*cos(d*x + c) - sqrt(2)*b*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^
2*d^4))^(1/4)*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/(b^2*d^4))^(3
/4) + 1) + 1/4*sqrt(2)*(1/(b^2*d^4))^(1/4)*log((b^2*d^2*sqrt(1/(b^2*d^4))*c
os(d*x + c) + sqrt(2)*b*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^2*d^4))^(
1/4)*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c)) - 1/4*sqrt(2)*(1/(b^2*d^4
))^(1/4)*log((b^2*d^2*sqrt(1/(b^2*d^4))*cos(d*x + c) - sqrt(2)*b*d*sqrt(b*s
in(d*x + c)/cos(d*x + c))*(1/(b^2*d^4))^(1/4)*cos(d*x + c) + b*sin(d*x + c)
)/cos(d*x + c))
```

giac [A] time = 0.54, size = 184, normalized size = 0.96

$$\frac{\sqrt{2}\sqrt{|b|}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|b|}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{|b|}}\right)}{2\,bd}+\frac{\sqrt{2}\sqrt{|b|}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|b|}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{|b|}}\right)}{2\,bd}+\frac{\sqrt{2}\sqrt{|b|}\log\left(b\tan(dx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(abs(b))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(b)) + 2*sqrt(
b*tan(d*x + c)))/sqrt(abs(b)))/(b*d) + 1/2*sqrt(2)*sqrt(abs(b))*arctan(-1/2
*sqrt(2)*(sqrt(2)*sqrt(abs(b)) - 2*sqrt(b*tan(d*x + c)))/sqrt(abs(b)))/(b*d
) + 1/4*sqrt(2)*sqrt(abs(b))*log(b*tan(d*x + c) + sqrt(2)*sqrt(b*tan(d*x +
c))*sqrt(abs(b)) + abs(b))/(b*d) - 1/4*sqrt(2)*sqrt(abs(b))*log(b*tan(d*x +
 c) - sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(abs(b)) + abs(b))/(b*d)
```

maple [A] time = 0.08, size = 166, normalized size = 0.86

$$\frac{\left(b^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\ln\left(\frac{b\tan(dx+c)+\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^{2}}}{b\tan(dx+c)-\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^{2}}}\right)}{4db}+\frac{\left(b^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^{2}\right)^{\frac{1}{4}}}+1\right)}{2db}-\frac{\left(b^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}}{}\right.}{2db}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c))^(1/2),x)
```

```
[Out] 1/4/d/b*(b^2)^(1/4)*2^(1/2)*ln((b*tan(d*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/
2)*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)-(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1
/2)+(b^2)^(1/2)))+1/2/d/b*(b^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(b^2)^(1/4)*(b
*tan(d*x+c))^(1/2)+1)-1/2/d/b*(b^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(b^2)^(1/
4)*(b*tan(d*x+c))^(1/2)+1)
```

maxima [A] time = 0.69, size = 155, normalized size = 0.81

$$\frac{2\sqrt{2}\sqrt{b}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)+2\sqrt{2}\sqrt{b}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)+\sqrt{2}\sqrt{b}\log\left(b\tan(dx\right.}{4bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*sqrt(b)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan(d
*x + c)))/sqrt(b)) + 2*sqrt(2)*sqrt(b)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(b)
 - 2*sqrt(b*tan(d*x + c)))/sqrt(b)) + sqrt(2)*sqrt(b)*log(b*tan(d*x + c) +
sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b) - sqrt(2)*sqrt(b)*log(b*tan(d*x +
 c) - sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b))/(b*d)
```

mupad [B] time = 2.72, size = 59, normalized size = 0.31

$$-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)1\mathrm{i}}{\sqrt{b}\,d}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)1\mathrm{i}}{\sqrt{b}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x))^(1/2),x)
```

```
[Out] - ((-1)^(1/4)*atan(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2))*1i)/(b^(1/2
)*d) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2))*1i)/(
b^(1/2)*d)
```

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

$$\int\frac{1}{\sqrt{b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/sqrt(b*tan(c + d*x)), x)
```

3.14 $\int \frac{1}{(b\tan(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=212

$$\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{3/2}d}-\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,b^{3/2}d}-\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\sqrt{b}\right)}{2\sqrt{2}\,b^{3/2}d}+\frac{\log\left(\sqrt{\right.}}{}$$

```
[Out] 1/2*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/b^(3/2)/d*2^(1/2)-1/2*ar
ctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/b^(3/2)/d*2^(1/2)-1/4*ln(b^(1/
2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/b^(3/2)/d*2^(1/2)+1/4*l
n(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/b^(3/2)/d*2^(1/2
)-2/b/d/(b*tan(d*x+c))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{3/2}d}-\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,b^{3/2}d}-\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\sqrt{b}\right)}{2\sqrt{2}\,b^{3/2}d}+\frac{\log\left(\sqrt{\right.}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(-3/2),x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*b^(3/2)*d) - Ar
cTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*b^(3/2)*d) - Log[
Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x]]]/(2*Sqrt[2]*b
^(3/2)*d) + Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*Sqrt[b*Tan[c + d*x
]]]/(2*Sqrt[2]*b^(3/2)*d) - 2/(b*d*Sqrt[b*Tan[c + d*x]])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

IntegerQ[n]

Rubi steps

$$\int \frac{1}{(b\tan(c+dx))^{3/2}}\,dx = -\frac{2}{bd\sqrt{b\tan(c+dx)}} - \frac{\int \sqrt{b\tan(c+dx)}\,dx}{b^2}$$

$$= -\frac{2}{bd\sqrt{b\tan(c+dx)}} - \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{bd}$$

$$= -\frac{2}{bd\sqrt{b\tan(c+dx)}} - \frac{2\,\text{Subst}\left(\int \frac{x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{bd}$$

$$= -\frac{2}{bd\sqrt{b\tan(c+dx)}} + \frac{\text{Subst}\left(\int \frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{bd} - \frac{\text{Subst}\left(\int \frac{b+x^2}{b^2+x^4}\,dx, x, \sqrt{\right.}}{bd}$$

$$= -\frac{2}{bd\sqrt{b\tan(c+dx)}} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{b}+2x}{-b-\sqrt{2}\sqrt{b}x-x^2}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}b^{3/2}d} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{}}{-b+\sqrt{2}}\right.}{}$$

$$= -\frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}b^{3/2}d} + \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)+\sqrt{2}\right.}{2\sqrt{2}b^{3/2}d}$$

$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}b^{3/2}d} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}b^{3/2}d} - \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\right.}{2\sqrt{2}b^{3/2}}$$

Mathematica [C] time = 0.07, size = 38, normalized size = 0.18

$$-\frac{2\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\tan^2(c+dx)\right)}{bd\sqrt{b\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(-3/2),x]
```

```
[Out] (-2*Hypergeometric2F1[-1/4, 1, 3/4, -Tan[c + d*x]^2])/(b*d*Sqrt[b*Tan[c + d
*x]])
```

fricas [B] time = 0.66, size = 652, normalized size = 3.08

$$8\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\cos(dx+c)\sin(dx+c)+4\left(\sqrt{2}\,b^2d\cos(dx+c)^2-\sqrt{2}\,b^2d\right)\left(\frac{1}{b^6d^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,bd\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/4*(8*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c)*sin(d*x + c) + 4*(sqr
t(2)*b^2*d*cos(d*x + c)^2 - sqrt(2)*b^2*d)*(1/(b^6*d^4))^(1/4)*arctan(-sqrt
(2)*b*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^6*d^4))^(1/4) + sqrt(2)*b*d
*sqrt((sqrt(2)*b^5*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^6*d^4))^(3/4
)*cos(d*x + c) + b^4*d^2*sqrt(1/(b^6*d^4))*cos(d*x + c) + b*sin(d*x + c))/c
os(d*x + c))*(1/(b^6*d^4))^(1/4) - 1) + 4*(sqrt(2)*b^2*d*cos(d*x + c)^2 - s
qrt(2)*b^2*d)*(1/(b^6*d^4))^(1/4)*arctan(-sqrt(2)*b*d*sqrt(b*sin(d*x + c)/c
os(d*x + c))*(1/(b^6*d^4))^(1/4) + sqrt(2)*b*d*sqrt(-(sqrt(2)*b^5*d^3*sqrt(
b*sin(d*x + c)/cos(d*x + c))*(1/(b^6*d^4))^(3/4)*cos(d*x + c) - b^4*d^2*sqr
t(1/(b^6*d^4))*cos(d*x + c) - b*sin(d*x + c))/cos(d*x + c))*(1/(b^6*d^4))^(
1/4) + 1) + (sqrt(2)*b^2*d*cos(d*x + c)^2 - sqrt(2)*b^2*d)*(1/(b^6*d^4))^(1
/4)*log((sqrt(2)*b^5*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^6*d^4))^(3
/4)*cos(d*x + c) + b^4*d^2*sqrt(1/(b^6*d^4))*cos(d*x + c) + b*sin(d*x + c))
/cos(d*x + c)) - (sqrt(2)*b^2*d*cos(d*x + c)^2 - sqrt(2)*b^2*d)*(1/(b^6*d^4
))^(1/4)*log(-(sqrt(2)*b^5*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^6*d^
4))^(3/4)*cos(d*x + c) - b^4*d^2*sqrt(1/(b^6*d^4))*cos(d*x + c) - b*sin(d*x
 + c))/cos(d*x + c)))/(b^2*d*cos(d*x + c)^2 - b^2*d)
```

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

$$\int \frac{1}{(b\tan(dx+c))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(-3/2), x)
```

maple [A] time = 0.06, size = 184, normalized size = 0.87

$$-\frac{\sqrt{2}\,\ln\left(\frac{b\tan(dx+c)-\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}{b\tan(dx+c)+\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}\right)}{4db\left(b^2\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^2\right)^{\frac{1}{4}}}+1\right)}{2db\left(b^2\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^2\right)^{\frac{1}{4}}}+1\right)}{2db\left(b^2\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c))^(3/2),x)
```

```
[Out] -1/4/d/b/(b^2)^(1/4)*2^(1/2)*ln((b*tan(d*x+c)-(b^2)^(1/4)*(b*tan(d*x+c))^(1
/2)*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(
1/2)+(b^2)^(1/2)))-1/2/d/b/(b^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(b^2)^(1/4)*(
b*tan(d*x+c))^(1/2)+1)+1/2/d/b/(b^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(b^2)^(1
/4)*(b*tan(d*x+c))^(1/2)+1)-2/b/d/(b*tan(d*x+c))^(1/2)
```

maxima [A] time = 0.59, size = 167, normalized size = 0.79

$$-\frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{\sqrt{b}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{\sqrt{b}}-\frac{\sqrt{2}\log\left(b\tan(dx+c)+\sqrt{2}\sqrt{b\tan(dx+c)}\sqrt{b}+b\right)}{\sqrt{b}}+\frac{\sqrt{2}\log\cdots}{\cdots}}{4bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan(d*x + c)
))/sqrt(b))/sqrt(b) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(b) - 2*sq
rt(b*tan(d*x + c)))/sqrt(b))/sqrt(b) - sqrt(2)*log(b*tan(d*x + c) + sqrt(2)
*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b) + sqrt(2)*log(b*tan(d*x + c) - s
qrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b) + 8/sqrt(b*tan(d*x + c)))/
(b*d)
```

mupad [B] time = 2.73, size = 76, normalized size = 0.36

$$\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)}{b^{3/2}\,d}-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)}{b^{3/2}\,d}-\frac{2}{b\,d\,\sqrt{b\tan(c+d\,x)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x))^(3/2),x)
```

```
[Out] ((-1)^(1/4)*atanh(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2)))/(b^(3/2)*d)
 - ((-1)^(1/4)*atan(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2)))/(b^(3/2)*
d) - 2/(b*d*(b*tan(c + d*x))^(1/2))
```

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

$$\int \frac{1}{(b\tan(c+dx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x))**(-3/2), x)
```

3.15 $\int \frac{1}{(b\tan(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=214

$$\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{5/2}d}-\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,b^{5/2}d}+\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\sqrt{b}\right)}{2\sqrt{2}\,b^{5/2}d}-\frac{\log\left(\sqrt{b}\right.}{}$$

```
[Out] 1/2*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/b^(5/2)/d*2^(1/2)-1/2*ar
ctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/b^(5/2)/d*2^(1/2)+1/4*ln(b^(1/
2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/b^(5/2)/d*2^(1/2)-1/4*l
n(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/b^(5/2)/d*2^(1/2
)-2/3/b/d/(b*tan(d*x+c))^(3/2)
```

Rubi [A] time = 0.15, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{5/2}d}-\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,b^{5/2}d}+\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\sqrt{b}\right)}{2\sqrt{2}\,b^{5/2}d}-\frac{\log\left(\sqrt{b}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(-5/2),x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*b^(5/2)*d) - Ar
cTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*b^(5/2)*d) + Log[
Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x]]]/(2*Sqrt[2]*b
^(5/2)*d) - Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*Sqrt[b*Tan[c + d*x
]]]/(2*Sqrt[2]*b^(5/2)*d) - 2/(3*b*d*(b*Tan[c + d*x])^(3/2))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

```
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{(b\tan(c+dx))^{5/2}}\,dx = -\frac{2}{3bd(b\tan(c+dx))^{3/2}} - \frac{\int \frac{1}{\sqrt{b\tan(c+dx)}}\,dx}{b^2}$$

$$= -\frac{2}{3bd(b\tan(c+dx))^{3/2}} - \frac{\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(b^2+x^2\right)}\,dx, x, b\tan(c+dx)\right)}{bd}$$

$$= -\frac{2}{3bd(b\tan(c+dx))^{3/2}} - \frac{2\,\text{Subst}\left(\int \frac{1}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{bd}$$

$$= -\frac{2}{3bd(b\tan(c+dx))^{3/2}} - \frac{\text{Subst}\left(\int \frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{b^2d} - \frac{\text{Subst}\left(\int \frac{b+x^2}{b^2+x^4}\,dx, x\right.}{b^2d}$$

$$= -\frac{2}{3bd(b\tan(c+dx))^{3/2}} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{b}+2x}{-b-\sqrt{2}\sqrt{b}x-x^2}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}\,b^{5/2}d} + \frac{\text{Subst}\left(\int \frac{}{-b}\right.}{}$$

$$= \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}\,b^{5/2}d} - \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)+\sqrt{2}\right.}{2\sqrt{2}\,b^{5/2}d}$$

$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{5/2}d} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{5/2}d} + \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\right.}{2\sqrt{2}\,b^{5/2}}$$

Mathematica [C] time = 0.09, size = 40, normalized size = 0.19

$$-\frac{2\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\tan^2(c+dx)\right)}{3bd(b\tan(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(-5/2),x]
```

```
[Out] (-2*Hypergeometric2F1[-3/4, 1, 1/4, -Tan[c + d*x]^2])/(3*b*d*(b*Tan[c + d*x
])^(3/2))
```

fricas [B] time = 0.81, size = 653, normalized size = 3.05

$$\frac{8\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\cos(dx+c)^2+12\left(\sqrt{2}\,b^3d\cos(dx+c)^2-\sqrt{2}\,b^3d\right)\left(\frac{1}{b^{10}d^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,b^7d^3\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\left(\frac{1}{b^{10}d^4}\right)^{\frac{3}{4}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(8*sqrt(b*sin(d*x + c)/cos(d*x + c))*cos(d*x + c)^2 + 12*(sqrt(2)*b^3*
d*cos(d*x + c)^2 - sqrt(2)*b^3*d)*(1/(b^10*d^4))^(1/4)*arctan(-sqrt(2)*b^7*
d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^10*d^4))^(3/4) + sqrt(2)*b^7*d^
3*sqrt((b^6*d^2*sqrt(1/(b^10*d^4))*cos(d*x + c) + sqrt(2)*b^3*d*sqrt(b*sin(
d*x + c)/cos(d*x + c))*(1/(b^10*d^4))^(1/4)*cos(d*x + c) + b*sin(d*x + c))/
cos(d*x + c))*(1/(b^10*d^4))^(3/4) - 1) + 12*(sqrt(2)*b^3*d*cos(d*x + c)^2
- sqrt(2)*b^3*d)*(1/(b^10*d^4))^(1/4)*arctan(-sqrt(2)*b^7*d^3*sqrt(b*sin(d*
x + c)/cos(d*x + c))*(1/(b^10*d^4))^(3/4) + sqrt(2)*b^7*d^3*sqrt((b^6*d^2*s
qrt(1/(b^10*d^4))*cos(d*x + c) - sqrt(2)*b^3*d*sqrt(b*sin(d*x + c)/cos(d*x
+ c))*(1/(b^10*d^4))^(1/4)*cos(d*x + c) + b*sin(d*x + c))/cos(d*x + c))*(1/
(b^10*d^4))^(3/4) + 1) - 3*(sqrt(2)*b^3*d*cos(d*x + c)^2 - sqrt(2)*b^3*d)*(
1/(b^10*d^4))^(1/4)*log((b^6*d^2*sqrt(1/(b^10*d^4))*cos(d*x + c) + sqrt(2)*
b^3*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^10*d^4))^(1/4)*cos(d*x + c) +
 b*sin(d*x + c))/cos(d*x + c)) + 3*(sqrt(2)*b^3*d*cos(d*x + c)^2 - sqrt(2)*
b^3*d)*(1/(b^10*d^4))^(1/4)*log((b^6*d^2*sqrt(1/(b^10*d^4))*cos(d*x + c) -
sqrt(2)*b^3*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^10*d^4))^(1/4)*cos(d*
x + c) + b*sin(d*x + c))/cos(d*x + c)))/(b^3*d*cos(d*x + c)^2 - b^3*d)
```

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

$$\int \frac{1}{(b\tan(dx+c))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(-5/2), x)
```

maple [A] time = 0.06, size = 184, normalized size = 0.86

$$-\frac{2}{3bd\,(b\tan(dx+c))^{\frac{3}{2}}}-\frac{\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\,\ln\left(\frac{b\tan(dx+c)+\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}{b\tan(dx+c)-\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}\right)}{4d\,b^3}-\frac{\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^2\right)^{\frac{1}{4}}}+1\right)}{2d\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c))^(5/2),x)
```

```
[Out] -2/3/b/d/(b*tan(d*x+c))^(3/2)-1/4/d/b^3*(b^2)^(1/4)*2^(1/2)*ln((b*tan(d*x+c
)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)-(b^2)
^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2)))-1/2/d/b^3*(b^2)^(1/4)*2^(
1/2)*arctan(2^(1/2)/(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)+1/2/d/b^3*(b^2)^(1/
4)*2^(1/2)*arctan(-2^(1/2)/(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)
```

maxima [A] time = 0.73, size = 168, normalized size = 0.79

$$-\frac{\frac{6\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{b^{\frac{3}{2}}}+\frac{6\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{b^{\frac{3}{2}}}+\frac{3\sqrt{2}\log\left(b\tan(dx+c)+\sqrt{2}\sqrt{b\tan(dx+c)}\sqrt{b}+b\right)}{b^{\frac{3}{2}}}-3\sqrt{2}}{12\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(5/2),x, algorithm="maxima")
```

```
[Out] -1/12*(6*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan(d*x + c
)))/sqrt(b))/b^(3/2) + 6*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(b) - 2*s
qrt(b*tan(d*x + c)))/sqrt(b))/b^(3/2) + 3*sqrt(2)*log(b*tan(d*x + c) + sqrt
(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/b^(3/2) - 3*sqrt(2)*log(b*tan(d*x + c
) - sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/b^(3/2) + 8/(b*tan(d*x + c))^
(3/2))/(b*d)
```

mupad [B] time = 3.07, size = 75, normalized size = 0.35

$$-\frac{2}{3\,b\,d\,(b\tan(c+d\,x))^{3/2}}+\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)\,1\mathrm{i}}{b^{5/2}\,d}+\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)\,1\mathrm{i}}{b^{5/2}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x))^(5/2),x)
```

```
[Out] ((-1)^(1/4)*atan(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2))*1i)/(b^(5/2)*
d) - 2/(3*b*d*(b*tan(c + d*x))^(3/2)) + ((-1)^(1/4)*atanh(((-1)^(1/4)*(b*ta
n(c + d*x))^(1/2))/b^(1/2))*1i)/(b^(5/2)*d)
```

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

$$\int\frac{1}{(b\tan(c+dx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))**(5/2),x)
```

```
[Out] Integral((b*tan(c + d*x))**(-5/2), x)
```

3.16 $\int \frac{1}{(b\tan(c+dx))^{7/2}}\,dx$

Optimal. Leaf size=234

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{7/2}d}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,b^{7/2}d}+\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}+\sqrt{b}\right)}{2\sqrt{2}\,b^{7/2}d}-\frac{\log(}{}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/b^(7/2)/d*2^(1/2)+1/2*a
rctan(1+2^(1/2)*(b*tan(d*x+c))^(1/2)/b^(1/2))/b^(7/2)/d*2^(1/2)+1/4*ln(b^(1
/2)-2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/b^(7/2)/d*2^(1/2)-1/4*
ln(b^(1/2)+2^(1/2)*(b*tan(d*x+c))^(1/2)+b^(1/2)*tan(d*x+c))/b^(7/2)/d*2^(1/
2)+2/b^3/d/(b*tan(d*x+c))^(1/2)-2/5/b/d/(b*tan(d*x+c))^(5/2)
```

Rubi [A] time = 0.18, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}\,b^{7/2}d}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}+1\right)}{\sqrt{2}\,b^{7/2}d}+\frac{2}{b^3d\sqrt{b\tan(c+dx)}}+\frac{\log\left(\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(}\right.}{2\sqrt{2}\,b^{7/2}d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(-7/2),x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*b^(7/2)*d)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[b*Tan[c + d*x]])/Sqrt[b]]/(Sqrt[2]*b^(7/2)*d) + L
og[Sqrt[b] + Sqrt[b]*Tan[c + d*x] - Sqrt[2]*Sqrt[b*Tan[c + d*x]]]/(2*Sqrt[2
]*b^(7/2)*d) - Log[Sqrt[b] + Sqrt[b]*Tan[c + d*x] + Sqrt[2]*Sqrt[b*Tan[c +
d*x]]]/(2*Sqrt[2]*b^(7/2)*d) - 2/(5*b*d*(b*Tan[c + d*x])^(5/2)) + 2/(b^3*d*
Sqrt[b*Tan[c + d*x]])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
```

```
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{(b\tan(c+dx))^{7/2}}\,dx = -\frac{2}{5bd(b\tan(c+dx))^{5/2}} - \frac{\int \frac{1}{(b\tan(c+dx))^{3/2}}\,dx}{b^2}$$
$$= -\frac{2}{5bd(b\tan(c+dx))^{5/2}} + \frac{2}{b^3 d\sqrt{b\tan(c+dx)}} + \frac{\int \sqrt{b\tan(c+dx)}\,dx}{b^4}$$
$$= -\frac{2}{5bd(b\tan(c+dx))^{5/2}} + \frac{2}{b^3 d\sqrt{b\tan(c+dx)}} + \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{b^3 d}$$
$$= -\frac{2}{5bd(b\tan(c+dx))^{5/2}} + \frac{2}{b^3 d\sqrt{b\tan(c+dx)}} + \frac{2\,\text{Subst}\left(\int \frac{x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{b^3 d}$$
$$= -\frac{2}{5bd(b\tan(c+dx))^{5/2}} + \frac{2}{b^3 d\sqrt{b\tan(c+dx)}} - \frac{\text{Subst}\left(\int \frac{b-x^2}{b^2+x^4}\,dx, x, \sqrt{b\tan(c+dx)}\right)}{b^3 d}$$
$$= -\frac{2}{5bd(b\tan(c+dx))^{5/2}} + \frac{2}{b^3 d\sqrt{b\tan(c+dx)}} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{b}+2x}{-b-\sqrt{2}\sqrt{b}x-x^2}\,dx, x, \sqrt{b\tan(c
}{2\sqrt{2}b^{7/2}d}$$
$$= \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)-\sqrt{2}\sqrt{b\tan(c+dx)}\right)}{2\sqrt{2}b^{7/2}d} - \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)+\sqrt{2}
}{2\sqrt{2}b^{7/2}d}$$
$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}b^{7/2}d} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{b\tan(c+dx)}}{\sqrt{b}}\right)}{\sqrt{2}b^{7/2}d} + \frac{\log\left(\sqrt{b}+\sqrt{b}\tan(c+dx)
}{2\sqrt{2}b^{7/2}d}$$

Mathematica [C] time = 0.11, size = 40, normalized size = 0.17

$$-\frac{2\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\tan^2(c+dx)\right)}{5bd(b\tan(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(-7/2),x]
```

```
[Out] (-2*Hypergeometric2F1[-5/4, 1, -1/4, -Tan[c + d*x]^2])/(5*b*d*(b*Tan[c + d*
x])^(5/2))
```

fricas [B] time = 1.02, size = 751, normalized size = 3.21

$$-\frac{8\left(6\,\cos\left(dx+c\right)^{3}-5\,\cos\left(dx+c\right)\right)\sqrt{\frac{b\sin(dx+c)}{\cos(dx+c)}}\,\sin\left(dx+c\right)+20\left(\sqrt{2}\,b^{4}d\cos\left(dx+c\right)^{4}-2\,\sqrt{2}\,b^{4}d\cos\left(dx+c\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(7/2),x, algorithm="fricas")
```

```
[Out] -1/20*(8*(6*cos(d*x + c)^3 - 5*cos(d*x + c))*sqrt(b*sin(d*x + c)/cos(d*x +
c))*sin(d*x + c) + 20*(sqrt(2)*b^4*d*cos(d*x + c)^4 - 2*sqrt(2)*b^4*d*cos(d
*x + c)^2 + sqrt(2)*b^4*d)*(1/(b^14*d^4))^(1/4)*arctan(-sqrt(2)*b^3*d*sqrt(
b*sin(d*x + c)/cos(d*x + c))*(1/(b^14*d^4))^(1/4) + sqrt(2)*b^3*d*sqrt((sqr
t(2)*b^11*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^14*d^4))^(3/4)*cos(d*
x + c) + b^8*d^2*sqrt(1/(b^14*d^4))*cos(d*x + c) + b*sin(d*x + c))/cos(d*x
+ c))*(1/(b^14*d^4))^(1/4) - 1) + 20*(sqrt(2)*b^4*d*cos(d*x + c)^4 - 2*sqrt
(2)*b^4*d*cos(d*x + c)^2 + sqrt(2)*b^4*d)*(1/(b^14*d^4))^(1/4)*arctan(-sqrt
(2)*b^3*d*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^14*d^4))^(1/4) + sqrt(2)*
b^3*d*sqrt(-(sqrt(2)*b^11*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^14*d^
4))^(3/4)*cos(d*x + c) - b^8*d^2*sqrt(1/(b^14*d^4))*cos(d*x + c) - b*sin(d*
x + c))/cos(d*x + c))*(1/(b^14*d^4))^(1/4) + 1) + 5*(sqrt(2)*b^4*d*cos(d*x
+ c)^4 - 2*sqrt(2)*b^4*d*cos(d*x + c)^2 + sqrt(2)*b^4*d)*(1/(b^14*d^4))^(1/
4)*log((sqrt(2)*b^11*d^3*sqrt(b*sin(d*x + c)/cos(d*x + c))*(1/(b^14*d^4))^(
3/4)*cos(d*x + c) + b^8*d^2*sqrt(1/(b^14*d^4))*cos(d*x + c) + b*sin(d*x + c
))/cos(d*x + c)) - 5*(sqrt(2)*b^4*d*cos(d*x + c)^4 - 2*sqrt(2)*b^4*d*cos(d*
x + c)^2 + sqrt(2)*b^4*d)*(1/(b^14*d^4))^(1/4)*log(-(sqrt(2)*b^11*d^3*sqrt(
b*sin(d*x + c)/cos(d*x + c))*(1/(b^14*d^4))^(3/4)*cos(d*x + c) - b^8*d^2*sq
rt(1/(b^14*d^4))*cos(d*x + c) - b*sin(d*x + c))/cos(d*x + c)))/(b^4*d*cos(d
*x + c)^4 - 2*b^4*d*cos(d*x + c)^2 + b^4*d)
```

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

$$\int \frac{1}{\left(b\tan\left(dx+c\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(-7/2), x)
```

maple [A] time = 0.07, size = 202, normalized size = 0.86

$$\frac{\sqrt{2}\,\ln\left(\frac{b\tan(dx+c)-\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^{2}}}{b\tan(dx+c)+\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^{2}}}\right)}{4d\,b^{3}\left(b^{2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^{2}\right)^{\frac{1}{4}}}+1\right)}{2d\,b^{3}\left(b^{2}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}}{\left(b^{2}\right)^{\frac{1}{4}}}+1\right)}{2d\,b^{3}\left(b^{2}\right)^{\frac{1}{4}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c))^(7/2),x)
```

```
[Out] 1/4/d/b^3/(b^2)^(1/4)*2^(1/2)*ln((b*tan(d*x+c)-(b^2)^(1/4)*(b*tan(d*x+c))^(
1/2)*2^(1/2)+(b^2)^(1/2))/(b*tan(d*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^
(1/2)+(b^2)^(1/2)))+1/2/d/b^3/(b^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(b^2)^(1/4
)*(b*tan(d*x+c))^(1/2)+1)-1/2/d/b^3/(b^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(b^
2)^(1/4)*(b*tan(d*x+c))^(1/2)+1)-2/5/b/d/(b*tan(d*x+c))^(5/2)+2/b^3/d/(b*ta
n(d*x+c))^(1/2)
```

maxima [A] time = 0.61, size = 195, normalized size = 0.83

$$\frac{\frac{5\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}+2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{\sqrt{b}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{b}-2\sqrt{b\tan(dx+c)}\right)}{2\sqrt{b}}\right)}{\sqrt{b}}-\frac{\sqrt{2}\log\left(b\tan(dx+c)+\sqrt{2}\sqrt{b\tan(dx+c)}\sqrt{b}+b\right)}{\sqrt{b}}+\frac{\sqrt{2}\log\left(b\tan(dx+c)-\sqrt{2}\sqrt{b\tan\cdots}\right)}{\sqrt{b}}\right.}{b^{2}}}{20\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(7/2),x, algorithm="maxima")
```

```
[Out] 1/20*(5*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(b) + 2*sqrt(b*tan(d*x +
 c)))/sqrt(b))/sqrt(b) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(b) - 2
*sqrt(b*tan(d*x + c)))/sqrt(b))/sqrt(b) - sqrt(2)*log(b*tan(d*x + c) + sqrt
(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b) + sqrt(2)*log(b*tan(d*x + c)
- sqrt(2)*sqrt(b*tan(d*x + c))*sqrt(b) + b)/sqrt(b))/b^2 + 8*(5*b^2*tan(d*x
 + c)^2 - b^2)/((b*tan(d*x + c))^(5/2)*b^2))/(b*d)
```

mupad [B] time = 3.11, size = 92, normalized size = 0.39

$$\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)}{b^{7/2}\,d}-\frac{\frac{2}{5\,b}-\frac{2\tan(c+d\,x)^{2}}{b}}{d\,\left(b\tan\left(c+d\,x\right)\right)^{5/2}}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{b\tan(c+d\,x)}}{\sqrt{b}}\right)}{b^{7/2}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x))^(7/2),x)
```

```
[Out] ((-1)^(1/4)*atan(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2)))/(b^(7/2)*d)
- (2/(5*b) - (2*tan(c + d*x)^2)/b)/(d*(b*tan(c + d*x))^(5/2)) - ((-1)^(1/4)
*atanh(((-1)^(1/4)*(b*tan(c + d*x))^(1/2))/b^(1/2)))/(b^(7/2)*d)
```

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

$$\int \frac{1}{(b\tan(c+dx))^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))**(7/2),x)
```

```
[Out] Integral((b*tan(c + d*x))**(-7/2), x)
```

3.17 $\int (b\tan(c+dx))^{4/3}\,dx$

Optimal. Leaf size=243

$$-\frac{b^{4/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d}+\frac{b^{4/3}\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2d}-\frac{b^{4/3}\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2d}+\frac{\sqrt{3}\,b^{4/3}\log\left(b^{2/3}-\sqrt{}\right.}{}$$

```
[Out] -b^(4/3)*arctan((b*tan(d*x+c))^(1/3)/b^(1/3))/d-1/2*b^(4/3)*arctan(-3^(1/2)
+2*(b*tan(d*x+c))^(1/3)/b^(1/3))/d-1/2*b^(4/3)*arctan(3^(1/2)+2*(b*tan(d*x+
c))^(1/3)/b^(1/3))/d+1/4*b^(4/3)*ln(b^(2/3)-b^(1/3)*3^(1/2)*(b*tan(d*x+c))^
(1/3)+(b*tan(d*x+c))^(2/3))*3^(1/2)/d-1/4*b^(4/3)*ln(b^(2/3)+b^(1/3)*3^(1/2
)*(b*tan(d*x+c))^(1/3)+(b*tan(d*x+c))^(2/3))*3^(1/2)/d+3*b*(b*tan(d*x+c))^(
1/3)/d
```

Rubi [A] time = 0.42, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3473, 3476, 329, 209, 634, 618, 204, 628, 203}

$$-\frac{b^{4/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d}+\frac{b^{4/3}\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2d}-\frac{b^{4/3}\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2d}+\frac{\sqrt{3}\,b^{4/3}\log\left(b^{2/3}-\sqrt{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(4/3),x]
```

```
[Out] -((b^(4/3)*ArcTan[(b*Tan[c + d*x])^(1/3)/b^(1/3)])/d) + (b^(4/3)*ArcTan[Sqr
t[3] - (2*(b*Tan[c + d*x])^(1/3))/b^(1/3)])/(2*d) - (b^(4/3)*ArcTan[Sqrt[3]
 + (2*(b*Tan[c + d*x])^(1/3))/b^(1/3)])/(2*d) + (Sqrt[3]*b^(4/3)*Log[b^(2/3
) - Sqrt[3]*b^(1/3)*(b*Tan[c + d*x])^(1/3) + (b*Tan[c + d*x])^(2/3)])/(4*d)
 - (Sqrt[3]*b^(4/3)*Log[b^(2/3) + Sqrt[3]*b^(1/3)*(b*Tan[c + d*x])^(1/3) +
(b*Tan[c + d*x])^(2/3)])/(4*d) + (3*b*(b*Tan[c + d*x])^(1/3))/d
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 209

```
Int[((a_) + (b_.)*(x_)^(n_))^(-1), x_Symbol] :> Module[{r = Numerator[Rt[a/
b, n]], s = Denominator[Rt[a/b, n]], k, u, v}, Simp[u = Int[(r - s*Cos[((2*
k - 1)*Pi)/n]*x)/(r^2 - 2*r*s*Cos[((2*k - 1)*Pi)/n]*x + s^2*x^2), x] + Int[
(r + s*Cos[((2*k - 1)*Pi)/n]*x)/(r^2 + 2*r*s*Cos[((2*k - 1)*Pi)/n]*x + s^2*
x^2), x]; (2*r^2*Int[1/(r^2 + s^2*x^2), x])/(a*n) + Dist[(2*r)/(a*n), Sum[u
, {k, 1, (n - 2)/4}], x], x]] /; FreeQ[{a, b}, x] && IGtQ[(n - 2)/4, 0] &&
PosQ[a/b]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
```

```
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int (b\tan(c+dx))^{4/3}\,dx = \frac{3b\sqrt[3]{b\tan(c+dx)}}{d} - b^2\int \frac{1}{(b\tan(c+dx))^{2/3}}\,dx$$
$$= \frac{3b\sqrt[3]{b\tan(c+dx)}}{d} - \frac{b^3\,\text{Subst}\left(\int \frac{1}{x^{2/3}(b^2+x^2)}\,dx, x, b\tan(c+dx)\right)}{d}$$
$$= \frac{3b\sqrt[3]{b\tan(c+dx)}}{d} - \frac{\left(3b^3\right)\text{Subst}\left(\int \frac{1}{b^2+x^6}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{d}$$
$$= \frac{3b\sqrt[3]{b\tan(c+dx)}}{d} - \frac{b^{4/3}\,\text{Subst}\left(\int \frac{\sqrt[3]{b}-\frac{\sqrt{3}x}{2}}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{d} - \frac{b^{4/3}\,\text{Subst}\left(\int\right.}{}$$
$$= -\frac{b^{4/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d} + \frac{3b\sqrt[3]{b\tan(c+dx)}}{d} + \frac{\left(\sqrt{3}\,b^{4/3}\right)\text{Subst}\left(\int \frac{-\sqrt{3}\sqrt[3]{b}+2x}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x\right.}{4d}$$
$$= -\frac{b^{4/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d} + \frac{\sqrt{3}\,b^{4/3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+dx)}+(b\tan(c+dx))^{2}\right.}{4d}$$
$$= -\frac{b^{4/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d} + \frac{b^{4/3}\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}-\frac{6\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)\right)}{2d} - \frac{b^{4/3}\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}\right.\right.}{2d}$$

Mathematica [C] time = 0.03, size = 38, normalized size = 0.16

$$-\frac{3b\sqrt[3]{b\tan(c+dx)}\left({}_2F_1\left(\frac{1}{6},1;\frac{7}{6};-\tan^2(c+dx)\right)-1\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(4/3),x]
```

```
[Out] (-3*b*(-1 + Hypergeometric2F1[1/6, 1, 7/6, -Tan[c + d*x]^2])*(b*Tan[c + d*x
])^(1/3))/d
```

fricas [B] time = 1.20, size = 588, normalized size = 2.42

$$-\frac{\sqrt{3}\left(\frac{b^8}{d^6}\right)^{\frac{1}{6}} d\log\left(\sqrt{3}\left(\frac{b^8}{d^6}\right)^{\frac{1}{6}} bd\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{1}{3}} + b^2\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{2}{3}} + \left(\frac{b^8}{d^6}\right)^{\frac{1}{3}} d^2\right) - \sqrt{3}\left(\frac{b^8}{d^6}\right)^{\frac{1}{6}} d\log\left(-\sqrt{3}\left(\frac{b^8}{d^6}\right)^{\frac{1}{6}} bd\left(\frac{b\sin}{\cos}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(4/3),x, algorithm="fricas")
```

```
[Out] -1/4*(sqrt(3)*(b^8/d^6)^(1/6)*d*log(sqrt(3)*(b^8/d^6)^(1/6)*b*d*(b*sin(d*x
+ c)/cos(d*x + c))^(1/3) + b^2*(b*sin(d*x + c)/cos(d*x + c))^(2/3) + (b^8/d
^6)^(1/3)*d^2) - sqrt(3)*(b^8/d^6)^(1/6)*d*log(-sqrt(3)*(b^8/d^6)^(1/6)*b*d
*(b*sin(d*x + c)/cos(d*x + c))^(1/3) + b^2*(b*sin(d*x + c)/cos(d*x + c))^(2
/3) + (b^8/d^6)^(1/3)*d^2) - 4*(b^8/d^6)^(1/6)*d*arctan(-(sqrt(3)*b^8 + 2*(
b^8/d^6)^(5/6)*b*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3) - 2*sqrt(sqrt(3)*(
b^8/d^6)^(1/6)*b*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3) + b^2*(b*sin(d*x + c
)/cos(d*x + c))^(2/3) + (b^8/d^6)^(1/3)*d^2)*(b^8/d^6)^(5/6)*d^5)/b^8) - 4*
(b^8/d^6)^(1/6)*d*arctan((sqrt(3)*b^8 - 2*(b^8/d^6)^(5/6)*b*d^5*(b*sin(d*x
+ c)/cos(d*x + c))^(1/3) + 2*sqrt(-sqrt(3)*(b^8/d^6)^(1/6)*b*d*(b*sin(d*x +
 c)/cos(d*x + c))^(1/3) + b^2*(b*sin(d*x + c)/cos(d*x + c))^(2/3) + (b^8/d^
6)^(1/3)*d^2)*(b^8/d^6)^(5/6)*d^5)/b^8) - 8*(b^8/d^6)^(1/6)*d*arctan(-((b^8
/d^6)^(5/6)*b*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3) - sqrt(b^2*(b*sin(d*x
 + c)/cos(d*x + c))^(2/3) + (b^8/d^6)^(1/3)*d^2)*(b^8/d^6)^(5/6)*d^5)/b^8)
- 12*b*(b*sin(d*x + c)/cos(d*x + c))^(1/3))/d
```

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

$$\int (b\tan(dx+c))^{\frac{4}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(4/3),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(4/3), x)
```

maple [A] time = 0.14, size = 215, normalized size = 0.88

$$\frac{3b(b\tan(dx+c))^{\frac{1}{3}}}{d} + \frac{b\sqrt{3}\,\left(b^2\right)^{\frac{1}{6}}\ln\left((b\tan(dx+c))^{\frac{2}{3}} - \sqrt{3}\,\left(b^2\right)^{\frac{1}{6}}(b\tan(dx+c))^{\frac{1}{3}} + \left(b^2\right)^{\frac{1}{3}}\right)}{4d} - \frac{b\left(b^2\right)^{\frac{1}{6}}\arctan\left(2\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^(4/3),x)
```

```
[Out] 3*b*(b*tan(d*x+c))^(1/3)/d+1/4/d*b*3^(1/2)*(b^2)^(1/6)*ln((b*tan(d*x+c))^(2
/3)-3^(1/2)*(b^2)^(1/6)*(b*tan(d*x+c))^(1/3)+(b^2)^(1/3))-1/2/d*b*(b^2)^(1/
6)*arctan(2*(b*tan(d*x+c))^(1/3)/(b^2)^(1/6)-3^(1/2))-1/d*b*(b^2)^(1/6)*arc
tan((b*tan(d*x+c))^(1/3)/(b^2)^(1/6))-1/4/d*b*3^(1/2)*(b^2)^(1/6)*ln((b*tan
(d*x+c))^(2/3)+3^(1/2)*(b^2)^(1/6)*(b*tan(d*x+c))^(1/3)+(b^2)^(1/3))-1/2/d*
b*(b^2)^(1/6)*arctan(2*(b*tan(d*x+c))^(1/3)/(b^2)^(1/6)+3^(1/2))
```

maxima [A] time = 0.66, size = 185, normalized size = 0.76

$$-\frac{\sqrt{3}\, b^{\frac{7}{3}} \log\left(\sqrt{3}\, (b\tan(dx+c))^{\frac{1}{3}} b^{\frac{1}{3}} + (b\tan(dx+c))^{\frac{2}{3}} + b^{\frac{2}{3}}\right) - \sqrt{3}\, b^{\frac{7}{3}} \log\left(-\sqrt{3}\, (b\tan(dx+c))^{\frac{1}{3}} b^{\frac{1}{3}} + (b\tan(dx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(4/3),x, algorithm="maxima")
```

```
[Out] -1/4*(sqrt(3)*b^(7/3)*log(sqrt(3)*(b*tan(d*x + c))^(1/3)*b^(1/3) + (b*tan(d
*x + c))^(2/3) + b^(2/3)) - sqrt(3)*b^(7/3)*log(-sqrt(3)*(b*tan(d*x + c))^(
1/3)*b^(1/3) + (b*tan(d*x + c))^(2/3) + b^(2/3)) + 2*b^(7/3)*arctan((sqrt(3
)*b^(1/3) + 2*(b*tan(d*x + c))^(1/3))/b^(1/3)) + 2*b^(7/3)*arctan(-(sqrt(3)
*b^(1/3) - 2*(b*tan(d*x + c))^(1/3))/b^(1/3)) + 4*b^(7/3)*arctan((b*tan(d*x
 + c))^(1/3)/b^(1/3)) - 12*(b*tan(d*x + c))^(1/3)*b^2)/(b*d)
```

mupad [B] time = 3.08, size = 247, normalized size = 1.02

$$\frac{3\,b\,(b\tan(c+d\,x))^{1/3}}{d} - \frac{(-1)^{1/6}\,b^{4/3}\,\mathrm{atan}\left(\frac{(-1)^{5/6}\,(b\tan(c+d\,x))^{1/3}\,1\mathrm{i}}{b^{1/3}}\right)1\mathrm{i}}{d} - \frac{(-1)^{1/6}\,b^{4/3}\,\ln\left((-1)^{1/6}\,b^{1/3} + 2\,(b\tan(c+d\,x))^{\right.}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^(4/3),x)
```

```
[Out] (3*b*(b*tan(c + d*x))^(1/3))/d - ((-1)^(1/6)*b^(4/3)*atan(((-1)^(5/6)*(b*ta
n(c + d*x))^(1/3)*1i)/b^(1/3))*1i)/d - ((-1)^(1/6)*b^(4/3)*log((-1)^(1/6)*b
^(1/3) + 2*(b*tan(c + d*x))^(1/3) + (-1)^(2/3)*3^(1/2)*b^(1/3))*((3^(1/2)*1
i)/2 + 1/2))/(2*d) - ((-1)^(1/6)*b^(4/3)*log(2*(b*tan(c + d*x))^(1/3) - (-1
)^(1/6)*b^(1/3) + (-1)^(2/3)*3^(1/2)*b^(1/3))*((3^(1/2)*1i)/2 - 1/2))/(2*d)
 + ((-1)^(1/6)*b^(4/3)*log((-1)^(1/6)*b^(1/3) - 2*(b*tan(c + d*x))^(1/3) +
(-1)^(2/3)*3^(1/2)*b^(1/3))*((3^(1/2)*1i)/4 + 1/4))/d + ((-1)^(1/6)*b^(4/3)
*log((-1)^(1/6)*b^(1/3) + 2*(b*tan(c + d*x))^(1/3) - (-1)^(2/3)*3^(1/2)*b^(
1/3))*((3^(1/2)*1i)/4 - 1/4))/d
```

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

$$\int (b\tan(c+dx))^{\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**(4/3),x)
```

```
[Out] Integral((b*tan(c + d*x))**(4/3), x)
```

3.18 $\int (b\tan(c+dx))^{2/3}\,dx$

Optimal. Leaf size=224

$$\frac{b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d}-\frac{b^{2/3}\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2d}+\frac{b^{2/3}\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2d}+\frac{\sqrt{3}\,b^{2/3}\log\left(b^{2/3}-\sqrt{3}\right.}{}$$

```
[Out] b^(2/3)*arctan((b*tan(d*x+c))^(1/3)/b^(1/3))/d+1/2*b^(2/3)*arctan(-3^(1/2)+
2*(b*tan(d*x+c))^(1/3)/b^(1/3))/d+1/2*b^(2/3)*arctan(3^(1/2)+2*(b*tan(d*x+c
))^(1/3)/b^(1/3))/d+1/4*b^(2/3)*ln(b^(2/3)-b^(1/3)*3^(1/2)*(b*tan(d*x+c))^(
1/3)+(b*tan(d*x+c))^(2/3))*3^(1/2)/d-1/4*b^(2/3)*ln(b^(2/3)+b^(1/3)*3^(1/2)
*(b*tan(d*x+c))^(1/3)+(b*tan(d*x+c))^(2/3))*3^(1/2)/d
```

Rubi [A] time = 0.39, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {3476, 329, 295, 634, 618, 204, 628, 203}

$$\frac{b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d}-\frac{b^{2/3}\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2d}+\frac{b^{2/3}\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2d}+\frac{\sqrt{3}\,b^{2/3}\log\left(b^{2/3}-\sqrt{3}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(2/3),x]
```

```
[Out] (b^(2/3)*ArcTan[(b*Tan[c + d*x])^(1/3)/b^(1/3)])/d - (b^(2/3)*ArcTan[Sqrt[3
] - (2*(b*Tan[c + d*x])^(1/3))/b^(1/3)])/(2*d) + (b^(2/3)*ArcTan[Sqrt[3] +
(2*(b*Tan[c + d*x])^(1/3))/b^(1/3)])/(2*d) + (Sqrt[3]*b^(2/3)*Log[b^(2/3) -
 Sqrt[3]*b^(1/3)*(b*Tan[c + d*x])^(1/3) + (b*Tan[c + d*x])^(2/3)])/(4*d) -
(Sqrt[3]*b^(2/3)*Log[b^(2/3) + Sqrt[3]*b^(1/3)*(b*Tan[c + d*x])^(1/3) + (b*
Tan[c + d*x])^(2/3)])/(4*d)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 295

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Module[{r = Numerator
[Rt[a/b, n]], s = Denominator[Rt[a/b, n]], k, u}, Simp[u = Int[(r*Cos[((2*k
 - 1)*m*Pi)/n] - s*Cos[((2*k - 1)*(m + 1)*Pi)/n]*x)/(r^2 - 2*r*s*Cos[((2*k
- 1)*Pi)/n]*x + s^2*x^2), x] + Int[(r*Cos[((2*k - 1)*m*Pi)/n] + s*Cos[((2*k
 - 1)*(m + 1)*Pi)/n]*x)/(r^2 + 2*r*s*Cos[((2*k - 1)*Pi)/n]*x + s^2*x^2), x]
; (2*(-1)^(m/2)*r^(m + 2)*Int[1/(r^2 + s^2*x^2), x])/(a*n*s^m) + Dist[(2*r^
(m + 1))/(a*n*s^m), Sum[u, {k, 1, (n - 2)/4}], x], x]] /; FreeQ[{a, b}, x]
&& IGtQ[(n - 2)/4, 0] && IGtQ[m, 0] && LtQ[m, n - 1] && PosQ[a/b]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int (b\tan(c+dx))^{2/3}\,dx = \frac{b\,\text{Subst}\left(\int \frac{x^{2/3}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{d}$$
$$= \frac{(3b)\,\text{Subst}\left(\int \frac{x^4}{b^2+x^6}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{d}$$
$$= \frac{b^{2/3}\,\text{Subst}\left(\int \frac{-\frac{\sqrt[3]{b}}{2}+\frac{\sqrt{3}x}{2}}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{d} + \frac{b^{2/3}\,\text{Subst}\left(\int \frac{-\frac{\sqrt[3]{b}}{2}-\frac{\sqrt{3}x}{2}}{b^{2/3}+\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x,\right.}{d}$$
$$= \frac{b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d} + \frac{\left(\sqrt{3}\,b^{2/3}\right)\text{Subst}\left(\int \frac{-\sqrt{3}\sqrt[3]{b}+2x}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{4d} - \frac{\left(\right.}{}$$
$$= \frac{b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d} + \frac{\sqrt{3}\,b^{2/3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+dx)}+(b\tan(c+dx))^{2/3}\right.}{4d}$$
$$= \frac{b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{d} - \frac{b^{2/3}\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}-\frac{6\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)\right)}{2d} + \frac{b^{2/3}\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}+\right.\right.}{2d}$$

Mathematica [C] time = 0.05, size = 40, normalized size = 0.18

$$\frac{3(b\tan(c+dx))^{5/3}\,{}_2F_1\left(\frac{5}{6},1;\frac{11}{6};-\tan^2(c+dx)\right)}{5bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(2/3),x]
```

```
[Out] (3*Hypergeometric2F1[5/6, 1, 11/6, -Tan[c + d*x]^2]*(b*Tan[c + d*x])^(5/3))
/(5*b*d)
```

fricas [B] time = 0.57, size = 583, normalized size = 2.60

$$-\frac{1}{4}\sqrt{3}\left(\frac{b^4}{d^6}\right)^{\frac{1}{6}}\log\left(\sqrt{3}\,b^3d^5\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{1}{3}}\left(\frac{b^4}{d^6}\right)^{\frac{5}{6}}+b^4d^4\left(\frac{b^4}{d^6}\right)^{\frac{2}{3}}+b^6\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{2}{3}}\right)+\frac{1}{4}\sqrt{3}\left(\frac{b^4}{d^6}\right)^{\frac{1}{6}}\log\left(-\sqrt{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(2/3),x, algorithm="fricas")
```

```
[Out] -1/4*sqrt(3)*(b^4/d^6)^(1/6)*log(sqrt(3)*b^3*d^5*(b*sin(d*x + c)/cos(d*x +
c))^(1/3)*(b^4/d^6)^(5/6) + b^4*d^4*(b^4/d^6)^(2/3) + b^6*(b*sin(d*x + c)/c
os(d*x + c))^(2/3)) + 1/4*sqrt(3)*(b^4/d^6)^(1/6)*log(-sqrt(3)*b^3*d^5*(b*s
in(d*x + c)/cos(d*x + c))^(1/3)*(b^4/d^6)^(5/6) + b^4*d^4*(b^4/d^6)^(2/3) +
 b^6*(b*sin(d*x + c)/cos(d*x + c))^(2/3)) - (b^4/d^6)^(1/6)*arctan(-(sqrt(3
)*b^4 + 2*b^3*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(b^4/d^6)^(1/6) - 2*sqr
t(sqrt(3)*b^3*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(b^4/d^6)^(5/6) + b^4
*d^4*(b^4/d^6)^(2/3) + b^6*(b*sin(d*x + c)/cos(d*x + c))^(2/3))*d*(b^4/d^6)
^(1/6))/b^4) - (b^4/d^6)^(1/6)*arctan((sqrt(3)*b^4 - 2*b^3*d*(b*sin(d*x + c
)/cos(d*x + c))^(1/3)*(b^4/d^6)^(1/6) + 2*sqrt(-sqrt(3)*b^3*d^5*(b*sin(d*x
+ c)/cos(d*x + c))^(1/3)*(b^4/d^6)^(5/6) + b^4*d^4*(b^4/d^6)^(2/3) + b^6*(b
*sin(d*x + c)/cos(d*x + c))^(2/3))*d*(b^4/d^6)^(1/6))/b^4) - 2*(b^4/d^6)^(1
/6)*arctan(-(b^3*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(b^4/d^6)^(1/6) - sq
rt(b^4*d^4*(b^4/d^6)^(2/3) + b^6*(b*sin(d*x + c)/cos(d*x + c))^(2/3))*d*(b^
4/d^6)^(1/6))/b^4)
```

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

$$\int (b\tan(dx+c))^{\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(2/3),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(2/3), x)
```

maple [A] time = 0.12, size = 202, normalized size = 0.90

$$\frac{\sqrt{3}\,\left(b^{2}\right)^{\frac{5}{6}}\ln\left((b\tan(dx+c))^{\frac{2}{3}}-\sqrt{3}\,\left(b^{2}\right)^{\frac{1}{6}}(b\tan(dx+c))^{\frac{1}{3}}+\left(b^{2}\right)^{\frac{1}{3}}\right)}{4db}+\frac{b\arctan\left(\frac{2(b\tan(dx+c))^{\frac{1}{3}}}{\left(b^{2}\right)^{\frac{1}{6}}}-\sqrt{3}\right)}{2d\left(b^{2}\right)^{\frac{1}{6}}}+\frac{b\arctan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^(2/3),x)
```

```
[Out] 1/4/d/b*3^(1/2)*(b^2)^(5/6)*ln((b*tan(d*x+c))^(2/3)-3^(1/2)*(b^2)^(1/6)*(b*
tan(d*x+c))^(1/3)+(b^2)^(1/3))+1/2/d*b/(b^2)^(1/6)*arctan(2*(b*tan(d*x+c))^
(1/3)/(b^2)^(1/6)-3^(1/2))+1/d*b/(b^2)^(1/6)*arctan((b*tan(d*x+c))^(1/3)/(b
^2)^(1/6))-1/4/d/b*3^(1/2)*(b^2)^(5/6)*ln((b*tan(d*x+c))^(2/3)+3^(1/2)*(b^2
)^(1/6)*(b*tan(d*x+c))^(1/3)+(b^2)^(1/3))+1/2/d*b/(b^2)^(1/6)*arctan(2*(b*t
an(d*x+c))^(1/3)/(b^2)^(1/6)+3^(1/2))
```

maxima [A] time = 0.48, size = 168, normalized size = 0.75

$$-\frac{\left(\frac{\sqrt{3}\log\left(\sqrt{3}\,(b\tan(dx+c))^{\frac{1}{3}}b^{\frac{1}{3}}+(b\tan(dx+c))^{\frac{2}{3}}+b^{\frac{2}{3}}\right)}{b^{\frac{1}{3}}}-\frac{\sqrt{3}\log\left(-\sqrt{3}\,(b\tan(dx+c))^{\frac{1}{3}}b^{\frac{1}{3}}+(b\tan(dx+c))^{\frac{2}{3}}+b^{\frac{2}{3}}\right)}{b^{\frac{1}{3}}}-\frac{2\arctan\left(\frac{\sqrt{3}b^{\frac{1}{3}}+2\,(b\tan(dx+c))^{\frac{1}{3}}}{b^{\frac{1}{3}}}\right)}{b^{\frac{1}{3}}}\right.}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(2/3),x, algorithm="maxima")
```

```
[Out] -1/4*(sqrt(3)*log(sqrt(3)*(b*tan(d*x + c))^(1/3)*b^(1/3) + (b*tan(d*x + c))
^(2/3) + b^(2/3))/b^(1/3) - sqrt(3)*log(-sqrt(3)*(b*tan(d*x + c))^(1/3)*b^(
1/3) + (b*tan(d*x + c))^(2/3) + b^(2/3))/b^(1/3) - 2*arctan((sqrt(3)*b^(1/3
) + 2*(b*tan(d*x + c))^(1/3))/b^(1/3))/b^(1/3) - 2*arctan(-(sqrt(3)*b^(1/3)
 - 2*(b*tan(d*x + c))^(1/3))/b^(1/3))/b^(1/3) - 4*arctan((b*tan(d*x + c))^(
1/3)/b^(1/3))/b^(1/3))*b/d
```

mupad [B] time = 2.95, size = 259, normalized size = 1.16

$$\frac{(-1)^{1/6}\,b^{2/3}\,\mathrm{atan}\left(\frac{(-1)^{2/3}\,(b\tan(c+d\,x))^{1/3}}{b^{1/3}}\right)\,1\mathrm{i}}{d}-\frac{(-1)^{1/6}\,b^{2/3}\,\ln\left(\frac{972\,b^9}{d^3}+\frac{486\,(-1)^{1/6}\,b^{26/3}\left(-1+\sqrt{3}\,1\mathrm{i}\right)(b\tan(c+d\,x))^{1/3}}{d^3}\right)\left(-\frac{1}{2}+\frac{\sqrt{3}\,1\mathrm{i}}{2}\right.}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^(2/3),x)
```

```
[Out] ((-1)^(1/6)*b^(2/3)*atan(((-1)^(2/3)*(b*tan(c + d*x))^(1/3))/b^(1/3))*1i)/d
 - ((-1)^(1/6)*b^(2/3)*log((972*b^9)/d^3 + (486*(-1)^(1/6)*b^(26/3)*(3^(1/2
)*1i - 1)*(b*tan(c + d*x))^(1/3))/d^3)*((3^(1/2)*1i)/2 - 1/2))/(2*d) - ((-1
)^(1/6)*b^(2/3)*log((972*b^9)/d^3 + (486*(-1)^(1/6)*b^(26/3)*(3^(1/2)*1i +
1)*(b*tan(c + d*x))^(1/3))/d^3)*((3^(1/2)*1i)/2 + 1/2))/(2*d) + ((-1)^(1/6)
*b^(2/3)*log((972*b^9)/d^3 - (486*(-1)^(1/6)*b^(26/3)*(3^(1/2)*1i - 1)*(b*t
an(c + d*x))^(1/3))/d^3)*((3^(1/2)*1i)/4 - 1/4))/d + ((-1)^(1/6)*b^(2/3)*lo
g((972*b^9)/d^3 - (486*(-1)^(1/6)*b^(26/3)*(3^(1/2)*1i + 1)*(b*tan(c + d*x)
)^(1/3))/d^3)*((3^(1/2)*1i)/4 + 1/4))/d
```

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

$$\int (b\tan(c+dx))^{\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**(2/3),x)
```

```
[Out] Integral((b*tan(c + d*x))**(2/3), x)
```

3.19 $\int \sqrt[3]{b \tan(c+dx)}\, dx$

Optimal. Leaf size=131

$$-\frac{\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{b^{2/3}-2(b\tan(c+dx))^{2/3}}{\sqrt{3}b^{2/3}}\right)}{2d}-\frac{\sqrt[3]{b}\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2d}+\frac{\sqrt[3]{b}\log\left(-b^{2/3}(b\tan(c+dx))^{2/3}+b^{4/3}+\right.}{4d}$$

```
[Out] -1/2*b^(1/3)*ln(b^(2/3)+(b*tan(d*x+c))^(2/3))/d+1/4*b^(1/3)*ln(b^(4/3)-b^(2
/3)*(b*tan(d*x+c))^(2/3)+(b*tan(d*x+c))^(4/3))/d-1/2*b^(1/3)*arctan(1/3*(b^
(2/3)-2*(b*tan(d*x+c))^(2/3))/b^(2/3)*3^(1/2))*3^(1/2)/d
```

Rubi [A] time = 0.10, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3476, 329, 275, 292, 31, 634, 617, 204, 628}

$$-\frac{\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{b^{2/3}-2(b\tan(c+dx))^{2/3}}{\sqrt{3}b^{2/3}}\right)}{2d}-\frac{\sqrt[3]{b}\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2d}+\frac{\sqrt[3]{b}\log\left(-b^{2/3}(b\tan(c+dx))^{2/3}+b^{4/3}+\right.}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(1/3),x]
```

```
[Out] -(Sqrt[3]*b^(1/3)*ArcTan[(b^(2/3) - 2*(b*Tan[c + d*x])^(2/3))/(Sqrt[3]*b^(2
/3))])/(2*d) - (b^(1/3)*Log[b^(2/3) + (b*Tan[c + d*x])^(2/3)])/(2*d) + (b^(
1/3)*Log[b^(4/3) - b^(2/3)*(b*Tan[c + d*x])^(2/3) + (b*Tan[c + d*x])^(4/3)]
)/(4*d)
```

Rule 31

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

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 292

```
Int[(x_)/((a_) + (b_.)*(x_)^3), x_Symbol] :> -Dist[(3*Rt[a, 3]*Rt[b, 3])^(-
1), Int[1/(Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]*Rt[b, 3]), I
nt[(Rt[a, 3] + Rt[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x
^2), x], x] /; FreeQ[{a, b}, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \sqrt[3]{b\tan(c+dx)}\,dx = \frac{b\,\text{Subst}\left(\int \frac{\sqrt[3]{x}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{d}$$
$$= \frac{(3b)\,\text{Subst}\left(\int \frac{x^3}{b^2+x^6}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{d}$$
$$= \frac{(3b)\,\text{Subst}\left(\int \frac{x}{b^2+x^3}\,dx, x, (b\tan(c+dx))^{2/3}\right)}{2d}$$
$$= -\frac{\sqrt[3]{b}\,\text{Subst}\left(\int \frac{1}{b^{2/3}+x}\,dx, x, (b\tan(c+dx))^{2/3}\right)}{2d} + \frac{\sqrt[3]{b}\,\text{Subst}\left(\int \frac{b^{2/3}+x}{b^{4/3}-b^{2/3}x+x^2}\,dx, x, (b\tan(c$$
$$= -\frac{\sqrt[3]{b}\,\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2d} + \frac{\sqrt[3]{b}\,\text{Subst}\left(\int \frac{-b^{2/3}+2x}{b^{4/3}-b^{2/3}x+x^2}\,dx, x, (b\tan(c+dx))^{2/3}\right)}{4d}$$
$$= -\frac{\sqrt[3]{b}\,\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2d} + \frac{\sqrt[3]{b}\,\log\left(b^{4/3}-b^{2/3}(b\tan(c+dx))^{2/3}+(b\tan(c+\right.}{4d}$$
$$= -\frac{\sqrt{3}\,\sqrt[3]{b}\,\tan^{-1}\left(\frac{1-\frac{2(b\tan(c+dx))^{2/3}}{b^{2/3}}}{\sqrt{3}}\right)}{2d} - \frac{\sqrt[3]{b}\,\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2d} + \frac{\sqrt[3]{b}\,\log\left(b^{4/3}-b\right.}{}$$

Mathematica [C] time = 0.04, size = 40, normalized size = 0.31

$$\frac{3(b\tan(c+dx))^{4/3}\,{}_2F_1\left(\frac{2}{3},1;\frac{5}{3};-\tan^2(c+dx)\right)}{4bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(1/3),x]
```

```
[Out] (3*Hypergeometric2F1[2/3, 1, 5/3, -Tan[c + d*x]^2]*(b*Tan[c + d*x])^(4/3))/
(4*b*d)
```

fricas [A] time = 0.48, size = 124, normalized size = 0.95

$$\frac{2\sqrt{3}\,(-b)^{\frac{1}{3}}\arctan\left(\frac{2\sqrt{3}\,(b\tan(dx+c))^{\frac{2}{3}}\,(-b)^{\frac{1}{3}}+\sqrt{3}\,b}{3\,b}\right)-(-b)^{\frac{1}{3}}\log\left((b\tan(dx+c))^{\frac{1}{3}}\,b\tan(dx+c)-(b\tan(dx+c))^{\frac{2}{3}}\,(-\right.}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(1/3),x, algorithm="fricas")
```

```
[Out] 1/4*(2*sqrt(3)*(-b)^(1/3)*arctan(1/3*(2*sqrt(3)*(b*tan(d*x + c))^(2/3)*(-b)
^(1/3) + sqrt(3)*b)/b) - (-b)^(1/3)*log((b*tan(d*x + c))^(1/3)*b*tan(d*x +
c) - (b*tan(d*x + c))^(2/3)*(-b)^(2/3) - (-b)^(1/3)*b) + 2*(-b)^(1/3)*log((
b*tan(d*x + c))^(2/3) + (-b)^(2/3)))/d
```

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

$$\int (b \tan (dx + c))^{\frac{1}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(1/3), x)
```

maple [A] time = 0.05, size = 114, normalized size = 0.87

$$-\frac{b \ln \left((b \tan (dx + c))^{\frac{2}{3}} + \left(b^2\right)^{\frac{1}{3}}\right)}{2d \left(b^2\right)^{\frac{1}{3}}} + \frac{b \ln \left((b \tan (dx + c))^{\frac{4}{3}} - \left(b^2\right)^{\frac{1}{3}} (b \tan (dx + c))^{\frac{2}{3}} + \left(b^2\right)^{\frac{2}{3}}\right)}{4d \left(b^2\right)^{\frac{1}{3}}} + \frac{b\sqrt{3}\ \arctan \left(\frac{\sqrt{3}\left(\frac{2(}{}\right.}{}\right.}{2d \left(b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^(1/3),x)
```

```
[Out] -1/2/d*b/(b^2)^(1/3)*ln((b*tan(d*x+c))^(2/3)+(b^2)^(1/3))+1/4/d*b/(b^2)^(1/
3)*ln((b*tan(d*x+c))^(4/3)-(b^2)^(1/3)*(b*tan(d*x+c))^(2/3)+(b^2)^(2/3))+1/
2/d*b*3^(1/2)/(b^2)^(1/3)*arctan(1/3*3^(1/2)*(2/(b^2)^(1/3)*(b*tan(d*x+c))^
(2/3)-1))
```

maxima [A] time = 0.80, size = 98, normalized size = 0.75

$$\frac{2\sqrt{3}\, b^{\frac{4}{3}} \arctan \left(\frac{\sqrt{3}\left(2\,(b \tan(dx+c))^{\frac{2}{3}} - b^{\frac{2}{3}}\right)}{3\, b^{\frac{2}{3}}}\right) + b^{\frac{4}{3}} \log \left((b \tan (dx + c))^{\frac{4}{3}} - (b \tan (dx + c))^{\frac{2}{3}}\, b^{\frac{2}{3}} + b^{\frac{4}{3}}\right) - 2\, b^{\frac{4}{3}} \log \left((b \tan (\right.}{4\, bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^(1/3),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(3)*b^(4/3)*arctan(1/3*sqrt(3)*(2*(b*tan(d*x + c))^(2/3) - b^(2/
3))/b^(2/3)) + b^(4/3)*log((b*tan(d*x + c))^(4/3) - (b*tan(d*x + c))^(2/3)*
b^(2/3) + b^(4/3)) - 2*b^(4/3)*log((b*tan(d*x + c))^(2/3) + b^(2/3)))/(b*d)
```

mupad [B] time = 2.63, size = 146, normalized size = 1.11

$$\frac{(-b)^{1/3}\ \ln\left(81\,(-b)^{16/3}\,(b\tan(c+d\,x))^{2/3}+81\,b^6\right)}{2\,d}-\frac{(-b)^{1/3}\ \ln\left(\frac{81\,b^6}{d^4}-\frac{81\,(-b)^{16/3}\left(\frac{1}{2}+\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)(b\tan(c+d\,x))^{2/3}}{d^4}\right)\left(\frac{1}{2}+\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^(1/3),x)
```

```
[Out] ((-b)^(1/3)*log(81*(-b)^(16/3)*(b*tan(c + d*x))^(2/3) + 81*b^6))/(2*d) - ((
-b)^(1/3)*log((81*b^6)/d^4 - (81*(-b)^(16/3)*((3^(1/2)*1i)/2 + 1/2)*(b*tan(
c + d*x))^(2/3))/d^4)*((3^(1/2)*1i)/2 + 1/2))/(2*d) + ((-b)^(1/3)*log((81*b
^6)/d^4 + (162*(-b)^(16/3)*((3^(1/2)*1i)/4 - 1/4)*(b*tan(c + d*x))^(2/3))/d
^4)*((3^(1/2)*1i)/4 - 1/4))/d
```

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

$$\int \sqrt[3]{b\tan(c+dx)}\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**(1/3),x)
```

```
[Out] Integral((b*tan(c + d*x))**(1/3), x)
```

3.20 $\int \frac{1}{\sqrt[3]{b\tan(c+dx)}}\,dx$

Optimal. Leaf size=131

$$-\frac{\sqrt{3}\tan^{-1}\left(\frac{b^{2/3}-2(b\tan(c+dx))^{2/3}}{\sqrt{3}\,b^{2/3}}\right)}{2\sqrt[3]{b}\,d}+\frac{\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2\sqrt[3]{b}\,d}-\frac{\log\left(-b^{2/3}(b\tan(c+dx))^{2/3}+b^{4/3}+(b\tan(c+d\right.}{4\sqrt[3]{b}\,d}$$

```
[Out] 1/2*ln(b^(2/3)+(b*tan(d*x+c))^(2/3))/b^(1/3)/d-1/4*ln(b^(4/3)-b^(2/3)*(b*ta
n(d*x+c))^(2/3)+(b*tan(d*x+c))^(4/3))/b^(1/3)/d-1/2*arctan(1/3*(b^(2/3)-2*(
b*tan(d*x+c))^(2/3))/b^(2/3)*3^(1/2))*3^(1/2)/b^(1/3)/d
```

Rubi [A] time = 0.10, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3476, 329, 275, 200, 31, 634, 617, 204, 628}

$$-\frac{\sqrt{3}\tan^{-1}\left(\frac{b^{2/3}-2(b\tan(c+dx))^{2/3}}{\sqrt{3}\,b^{2/3}}\right)}{2\sqrt[3]{b}\,d}+\frac{\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2\sqrt[3]{b}\,d}-\frac{\log\left(-b^{2/3}(b\tan(c+dx))^{2/3}+b^{4/3}+(b\tan(c+d\right.}{4\sqrt[3]{b}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(-1/3),x]
```

```
[Out] -(Sqrt[3]*ArcTan[(b^(2/3) - 2*(b*Tan[c + d*x])^(2/3))/(Sqrt[3]*b^(2/3))])/(
2*b^(1/3)*d) + Log[b^(2/3) + (b*Tan[c + d*x])^(2/3)]/(2*b^(1/3)*d) - Log[b^
(4/3) - b^(2/3)*(b*Tan[c + d*x])^(2/3) + (b*Tan[c + d*x])^(4/3)]/(4*b^(1/3)
*d)
```

Rule 31

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

Rule 200

```
Int[((a_) + (b_.)*(x_)^3)^(-1), x_Symbol] :> Dist[1/(3*Rt[a, 3]^2), Int[1/(
Rt[a, 3] + Rt[b, 3]*x), x], x] + Dist[1/(3*Rt[a, 3]^2), Int[(2*Rt[a, 3] - R
t[b, 3]*x)/(Rt[a, 3]^2 - Rt[a, 3]*Rt[b, 3]*x + Rt[b, 3]^2*x^2), x], x] /; F
reeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
```

```
a, 0] || LtQ[b, 0])
```

Rule 275

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k = GCD[m
+ 1, n]}, Dist[1/k, Subst[Int[x^((m + 1)/k - 1)*(a + b*x^(n/k))^p, x], x, x
^k], x] /; k != 1] /; FreeQ[{a, b, p}, x] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{\sqrt[3]{b\tan(c+dx)}}\,dx = \frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt[3]{x}\left(b^2+x^2\right)}\,dx, x, b\tan(c+dx)\right)}{d}$$
$$= \frac{(3b)\,\text{Subst}\left(\int \frac{x}{b^2+x^6}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{d}$$
$$= \frac{(3b)\,\text{Subst}\left(\int \frac{1}{b^2+x^3}\,dx, x, (b\tan(c+dx))^{2/3}\right)}{2d}$$
$$= \frac{\text{Subst}\left(\int \frac{1}{b^{2/3}+x}\,dx, x, (b\tan(c+dx))^{2/3}\right)}{2\sqrt[3]{b}\,d} + \frac{\text{Subst}\left(\int \frac{2b^{2/3}-x}{b^{4/3}-b^{2/3}x+x^2}\,dx, x, (b\tan(c+dx))^{2/3}\right)}{2\sqrt[3]{b}\,d}$$
$$= \frac{\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2\sqrt[3]{b}\,d} - \frac{\text{Subst}\left(\int \frac{-b^{2/3}+2x}{b^{4/3}-b^{2/3}x+x^2}\,dx, x, (b\tan(c+dx))^{2/3}\right)}{4\sqrt[3]{b}\,d} + \frac{\left(3\sqrt[3]{b}\right)}{}$$
$$= \frac{\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2\sqrt[3]{b}\,d} - \frac{\log\left(b^{4/3}-b^{2/3}(b\tan(c+dx))^{2/3}+(b\tan(c+dx))^{4/3}\right)}{4\sqrt[3]{b}\,d} +$$
$$= -\frac{\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2(b\tan(c+dx))^{2/3}}{b^{2/3}}}{\sqrt{3}}\right)}{2\sqrt[3]{b}\,d} + \frac{\log\left(b^{2/3}+(b\tan(c+dx))^{2/3}\right)}{2\sqrt[3]{b}\,d} - \frac{\log\left(b^{4/3}-b^{2/3}(b\tan(c+\right.}{4}$$

Mathematica [A] time = 0.14, size = 100, normalized size = 0.76

$$\frac{\sqrt[3]{\tan(c+dx)}\left(2\sqrt{3}\tan^{-1}\left(\frac{2\tan^{\frac{2}{3}}(c+dx)-1}{\sqrt{3}}\right)+2\log\left(\tan^{\frac{2}{3}}(c+dx)+1\right)-\log\left(\tan^{\frac{4}{3}}(c+dx)-\tan^{\frac{2}{3}}(c+dx)+1\right)\right)}{4d\sqrt[3]{b\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(-1/3),x]
```

```
[Out] ((2*Sqrt[3]*ArcTan[(-1 + 2*Tan[c + d*x]^(2/3))/Sqrt[3]] + 2*Log[1 + Tan[c +
 d*x]^(2/3)] - Log[1 - Tan[c + d*x]^(2/3) + Tan[c + d*x]^(4/3)])*Tan[c + d*
x]^(1/3))/(4*d*(b*Tan[c + d*x])^(1/3))
```

fricas [A] time = 0.69, size = 299, normalized size = 2.28

$$\left[\frac{\sqrt{3}\,b\sqrt{-\frac{1}{b^{\frac{2}{3}}}}\log\left(\frac{2\sqrt{3}\,(b\tan(dx+c))^{\frac{1}{3}}b\sqrt{-\frac{1}{b^{\frac{2}{3}}}}\tan(dx+c)+2\,b\tan(dx+c)^{2}-\sqrt{3}\,b^{\frac{4}{3}}\sqrt{-\frac{1}{b^{\frac{2}{3}}}}+(b\tan(dx+c))^{\frac{2}{3}}\left(\sqrt{3}\,b^{\frac{2}{3}}\sqrt{-\frac{1}{b^{\frac{2}{3}}}}-3\,b^{\frac{1}{3}}\right)-b}{\tan(dx+c)^{2}+1}\right)-b^{\frac{2}{3}}\,\mathrm{lo}}{4\,bd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(1/3),x, algorithm="fricas")
```

```
[Out] [1/4*(sqrt(3)*b*sqrt(-1/b^(2/3))*log((2*sqrt(3)*(b*tan(d*x + c))^(1/3)*b*sq
rt(-1/b^(2/3))*tan(d*x + c) + 2*b*tan(d*x + c)^2 - sqrt(3)*b^(4/3)*sqrt(-1/
b^(2/3)) + (b*tan(d*x + c))^(2/3)*(sqrt(3)*b^(2/3)*sqrt(-1/b^(2/3)) - 3*b^(
1/3)) - b)/(tan(d*x + c)^2 + 1)) - b^(2/3)*log((b*tan(d*x + c))^(1/3)*b*tan
(d*x + c) - (b*tan(d*x + c))^(2/3)*b^(2/3) + b^(4/3)) + 2*b^(2/3)*log((b*ta
n(d*x + c))^(2/3) + b^(2/3)))/(b*d), 1/4*(2*sqrt(3)*b^(2/3)*arctan(1/3*sqrt
(3)*(2*(b*tan(d*x + c))^(2/3)*b^(2/3) - b^(4/3))/b^(4/3)) - b^(2/3)*log((b*
tan(d*x + c))^(1/3)*b*tan(d*x + c) - (b*tan(d*x + c))^(2/3)*b^(2/3) + b^(4/
3)) + 2*b^(2/3)*log((b*tan(d*x + c))^(2/3) + b^(2/3)))/(b*d)]
```

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

$$\int\frac{1}{(b\tan(dx+c))^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(-1/3), x)
```

maple [A] time = 0.05, size = 114, normalized size = 0.87

$$\frac{b\ln\left((b\tan(dx+c))^{\frac{2}{3}}+\left(b^{2}\right)^{\frac{1}{3}}\right)}{2d\left(b^{2}\right)^{\frac{2}{3}}}-\frac{b\ln\left((b\tan(dx+c))^{\frac{4}{3}}-\left(b^{2}\right)^{\frac{1}{3}}(b\tan(dx+c))^{\frac{2}{3}}+\left(b^{2}\right)^{\frac{2}{3}}\right)}{4d\left(b^{2}\right)^{\frac{2}{3}}}+\frac{b\sqrt{3}\,\arctan\left(\frac{\sqrt{3}\left(2(\ldots\right.}{\ldots}\right.}{2d\left(b^{2}\right)^{\ldots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c))^(1/3),x)
```

```
[Out] 1/2/d*b/(b^2)^(2/3)*ln((b*tan(d*x+c))^(2/3)+(b^2)^(1/3))-1/4/d*b/(b^2)^(2/3
)*ln((b*tan(d*x+c))^(4/3)-(b^2)^(1/3)*(b*tan(d*x+c))^(2/3)+(b^2)^(2/3))+1/2
/d*b/(b^2)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/(b^2)^(1/3)*(b*tan(d*x+c))^(
2/3)-1))
```

maxima [A] time = 0.77, size = 99, normalized size = 0.76

$$\frac{2\sqrt{3}\,b^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(b\tan(dx+c))^{\frac{2}{3}}-b^{\frac{2}{3}}\right)}{3\,b^{\frac{2}{3}}}\right)-b^{\frac{2}{3}}\log\left((b\tan(dx+c))^{\frac{4}{3}}-(b\tan(dx+c))^{\frac{2}{3}}\,b^{\frac{2}{3}}+b^{\frac{4}{3}}\right)+2\,b^{\frac{2}{3}}\log\left((b\tan(\right.}{4\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(1/3),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(3)*b^(2/3)*arctan(1/3*sqrt(3)*(2*(b*tan(d*x + c))^(2/3) - b^(2/
3))/b^(2/3)) - b^(2/3)*log((b*tan(d*x + c))^(4/3) - (b*tan(d*x + c))^(2/3)*
b^(2/3) + b^(4/3)) + 2*b^(2/3)*log((b*tan(d*x + c))^(2/3) + b^(2/3)))/(b*d)
```

mupad [B] time = 2.73, size = 128, normalized size = 0.98

$$\frac{\ln\left((b\tan(c+d\,x))^{2/3}+b^{2/3}\right)}{2\,b^{1/3}\,d}+\frac{\ln\left(\frac{81\,b^{11/3}\,\left(-1+\sqrt{3}\,1\mathrm{i}\right)}{d^3}+\frac{162\,b^3\,(b\tan(c+d\,x))^{2/3}}{d^3}\right)\,\left(-1+\sqrt{3}\,1\mathrm{i}\right)}{4\,b^{1/3}\,d}-\frac{\ln\left(\frac{81\,b^{11/3}\,\left(1+\sqrt{3}\,1\mathrm{i}\right)}{d^3}-\frac{162\,\right.}{4\,}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x))^(1/3),x)
```

```
[Out] log((b*tan(c + d*x))^(2/3) + b^(2/3))/(2*b^(1/3)*d) + (log((81*b^(11/3)*(3^
(1/2)*1i - 1))/d^3 + (162*b^3*(b*tan(c + d*x))^(2/3))/d^3)*(3^(1/2)*1i - 1)
)/(4*b^(1/3)*d) - (log((81*b^(11/3)*(3^(1/2)*1i + 1))/d^3 - (162*b^3*(b*tan
(c + d*x))^(2/3))/d^3)*(3^(1/2)*1i + 1))/(4*b^(1/3)*d)
```

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

$$\int \frac{1}{\sqrt[3]{b\tan(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))**(1/3),x)
```

```
[Out] Integral((b*tan(c + d*x))**(-1/3), x)
```

3.21 $\int \frac{1}{(b\tan(c+dx))^{2/3}}\,dx$

Optimal. Leaf size=224

$$\frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{2/3}d}-\frac{\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2b^{2/3}d}+\frac{\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2b^{2/3}d}-\frac{\sqrt{3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+}\right.}{4b^{2/3}d}$$

```
[Out] arctan((b*tan(d*x+c))^(1/3)/b^(1/3))/b^(2/3)/d+1/2*arctan(-3^(1/2)+2*(b*tan
(d*x+c))^(1/3)/b^(1/3))/b^(2/3)/d+1/2*arctan(3^(1/2)+2*(b*tan(d*x+c))^(1/3)
/b^(1/3))/b^(2/3)/d-1/4*ln(b^(2/3)-b^(1/3)*3^(1/2)*(b*tan(d*x+c))^(1/3)+(b*
tan(d*x+c))^(2/3))*3^(1/2)/b^(2/3)/d+1/4*ln(b^(2/3)+b^(1/3)*3^(1/2)*(b*tan(
d*x+c))^(1/3)+(b*tan(d*x+c))^(2/3))*3^(1/2)/b^(2/3)/d
```

Rubi [A] time = 0.33, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {3476, 329, 209, 634, 618, 204, 628, 203}

$$\frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{2/3}d}-\frac{\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2b^{2/3}d}+\frac{\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2b^{2/3}d}-\frac{\sqrt{3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+}\right.}{4b^{2/3}d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(-2/3),x]
```

```
[Out] ArcTan[(b*Tan[c + d*x])^(1/3)/b^(1/3)]/(b^(2/3)*d) - ArcTan[Sqrt[3] - (2*(b
*Tan[c + d*x])^(1/3))/b^(1/3)]/(2*b^(2/3)*d) + ArcTan[Sqrt[3] + (2*(b*Tan[c
 + d*x])^(1/3))/b^(1/3)]/(2*b^(2/3)*d) - (Sqrt[3]*Log[b^(2/3) - Sqrt[3]*b^(
1/3)*(b*Tan[c + d*x])^(1/3) + (b*Tan[c + d*x])^(2/3)])/(4*b^(2/3)*d) + (Sqr
t[3]*Log[b^(2/3) + Sqrt[3]*b^(1/3)*(b*Tan[c + d*x])^(1/3) + (b*Tan[c + d*x]
)^(2/3)])/(4*b^(2/3)*d)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 209

```
Int[((a_) + (b_.)*(x_)^(n_))^(-1), x_Symbol] :> Module[{r = Numerator[Rt[a/
b, n]], s = Denominator[Rt[a/b, n]], k, u, v}, Simp[u = Int[(r - s*Cos[((2*
k - 1)*Pi)/n]*x)/(r^2 - 2*r*s*Cos[((2*k - 1)*Pi)/n]*x + s^2*x^2), x] + Int[
(r + s*Cos[((2*k - 1)*Pi)/n]*x)/(r^2 + 2*r*s*Cos[((2*k - 1)*Pi)/n]*x + s^2*
x^2), x]; (2*r^2*Int[1/(r^2 + s^2*x^2), x])/(a*n) + Dist[(2*r)/(a*n), Sum[u
, {k, 1, (n - 2)/4}], x], x]] /; FreeQ[{a, b}, x] && IGtQ[(n - 2)/4, 0] &&
PosQ[a/b]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{(b\tan(c+dx))^{2/3}}\,dx = \frac{b\,\text{Subst}\left(\int \frac{1}{x^{2/3}(b^2+x^2)}\,dx, x, b\tan(c+dx)\right)}{d}$$
$$= \frac{(3b)\,\text{Subst}\left(\int \frac{1}{b^2+x^6}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{d}$$
$$= \frac{\text{Subst}\left(\int \frac{\sqrt[3]{b}-\frac{\sqrt{3}x}{2}}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{b^{2/3}d} + \frac{\text{Subst}\left(\int \frac{\sqrt[3]{b}+\frac{\sqrt{3}x}{2}}{b^{2/3}+\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan}\right.}{b^{2/3}d}$$
$$= \frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{2/3}d} - \frac{\sqrt{3}\,\text{Subst}\left(\int \frac{-\sqrt{3}\sqrt[3]{b}+2x}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{4b^{2/3}d} + \frac{\sqrt{3}\,\text{Subs}}{}$$
$$= \frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{2/3}d} - \frac{\sqrt{3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+dx)}+(b\tan(c+dx))^{2/3}\right)}{4b^{2/3}d} + $$
$$= \frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{2/3}d} - \frac{\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}-\frac{6\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)\right)}{2b^{2/3}d} + \frac{\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}+\frac{6\sqrt[3]{b\tan(c+d}}{\sqrt[3]{b}}\right.\right.}{2b^{2/3}d}$$

Mathematica [C] time = 0.03, size = 38, normalized size = 0.17

$$\frac{3\sqrt[3]{b\tan(c+dx)}\,{}_2F_1\left(\frac{1}{6},1;\frac{7}{6};-\tan^2(c+dx)\right)}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(-2/3),x]
```

```
[Out] (3*Hypergeometric2F1[1/6, 1, 7/6, -Tan[c + d*x]^2]*(b*Tan[c + d*x])^(1/3))/
(b*d)
```

fricas [B] time = 0.91, size = 548, normalized size = 2.45

$$\frac{1}{4}\sqrt{3}\left(\frac{1}{b^4d^6}\right)^{\frac{1}{6}}\log\left(b^2d^2\left(\frac{1}{b^4d^6}\right)^{\frac{1}{3}}+\sqrt{3}\,bd\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{1}{3}}\left(\frac{1}{b^4d^6}\right)^{\frac{1}{6}}+\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{2}{3}}\right)-\frac{1}{4}\sqrt{3}\left(\frac{1}{b^4d^6}\right)^{\frac{1}{6}}\log\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(2/3),x, algorithm="fricas")
```

```
[Out] 1/4*sqrt(3)*(1/(b^4*d^6))^(1/6)*log(b^2*d^2*(1/(b^4*d^6))^(1/3) + sqrt(3)*b
*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^4*d^6))^(1/6) + (b*sin(d*x + c
)/cos(d*x + c))^(2/3)) - 1/4*sqrt(3)*(1/(b^4*d^6))^(1/6)*log(b^2*d^2*(1/(b^
4*d^6))^(1/3) - sqrt(3)*b*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^4*d^6
))^(1/6) + (b*sin(d*x + c)/cos(d*x + c))^(2/3)) - (1/(b^4*d^6))^(1/6)*arcta
n(2*sqrt(b^2*d^2*(1/(b^4*d^6))^(1/3) + sqrt(3)*b*d*(b*sin(d*x + c)/cos(d*x
+ c))^(1/3)*(1/(b^4*d^6))^(1/6) + (b*sin(d*x + c)/cos(d*x + c))^(2/3))*b^3*
d^5*(1/(b^4*d^6))^(5/6) - 2*b^3*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/
(b^4*d^6))^(5/6) - sqrt(3)) - (1/(b^4*d^6))^(1/6)*arctan(2*sqrt(b^2*d^2*(1/
(b^4*d^6))^(1/3) - sqrt(3)*b*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^4*
d^6))^(1/6) + (b*sin(d*x + c)/cos(d*x + c))^(2/3))*b^3*d^5*(1/(b^4*d^6))^(5
/6) - 2*b^3*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^4*d^6))^(5/6) + s
qrt(3)) - 2*(1/(b^4*d^6))^(1/6)*arctan(sqrt(b^2*d^2*(1/(b^4*d^6))^(1/3) + (
b*sin(d*x + c)/cos(d*x + c))^(2/3))*b^3*d^5*(1/(b^4*d^6))^(5/6) - b^3*d^5*(
b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^4*d^6))^(5/6))
```

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

$$\int \frac{1}{(b\tan(dx+c))^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(2/3),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(-2/3), x)
```

maple [A] time = 0.12, size = 208, normalized size = 0.93

$$-\frac{\sqrt{3}\,\left(b^{2}\right)^{\frac{1}{6}}\ln\left(\left(b\tan(dx+c)\right)^{\frac{2}{3}}-\sqrt{3}\,\left(b^{2}\right)^{\frac{1}{6}}\left(b\tan(dx+c)\right)^{\frac{1}{3}}+\left(b^{2}\right)^{\frac{1}{3}}\right)}{4db}+\frac{\left(b^{2}\right)^{\frac{1}{6}}\arctan\left(\frac{2\left(b\tan(dx+c)\right)^{\frac{1}{3}}}{\left(b^{2}\right)^{\frac{1}{6}}}-\sqrt{3}\right)}{2db}+\frac{\left(b^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c))^(2/3),x)
```

```
[Out] -1/4/d/b*3^(1/2)*(b^2)^(1/6)*ln((b*tan(d*x+c))^(2/3)-3^(1/2)*(b^2)^(1/6)*(b
*tan(d*x+c))^(1/3)+(b^2)^(1/3))+1/2/d/b*(b^2)^(1/6)*arctan(2*(b*tan(d*x+c))
^(1/3)/(b^2)^(1/6)-3^(1/2))+1/d/b*(b^2)^(1/6)*arctan((b*tan(d*x+c))^(1/3)/(
b^2)^(1/6))+1/4/d/b*3^(1/2)*(b^2)^(1/6)*ln((b*tan(d*x+c))^(2/3)+3^(1/2)*(b^
2)^(1/6)*(b*tan(d*x+c))^(1/3)+(b^2)^(1/3))+1/2/d/b*(b^2)^(1/6)*arctan(2*(b*
tan(d*x+c))^(1/3)/(b^2)^(1/6)+3^(1/2))
```

maxima [A] time = 0.83, size = 170, normalized size = 0.76

$$\sqrt{3}\,b^{\frac{1}{3}}\log\left(\sqrt{3}\,\left(b\tan\left(dx+c\right)\right)^{\frac{1}{3}}b^{\frac{1}{3}}+\left(b\tan\left(dx+c\right)\right)^{\frac{2}{3}}+b^{\frac{2}{3}}\right)-\sqrt{3}\,b^{\frac{1}{3}}\log\left(-\sqrt{3}\,\left(b\tan\left(dx+c\right)\right)^{\frac{1}{3}}b^{\frac{1}{3}}+\left(b\tan\left(dx\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(2/3),x, algorithm="maxima")
```

```
[Out] 1/4*(sqrt(3)*b^(1/3)*log(sqrt(3)*(b*tan(d*x + c))^(1/3)*b^(1/3) + (b*tan(d*
x + c))^(2/3) + b^(2/3)) - sqrt(3)*b^(1/3)*log(-sqrt(3)*(b*tan(d*x + c))^(1
/3)*b^(1/3) + (b*tan(d*x + c))^(2/3) + b^(2/3)) + 2*b^(1/3)*arctan((sqrt(3)
*b^(1/3) + 2*(b*tan(d*x + c))^(1/3))/b^(1/3)) + 2*b^(1/3)*arctan(-(sqrt(3)*
b^(1/3) - 2*(b*tan(d*x + c))^(1/3))/b^(1/3)) + 4*b^(1/3)*arctan((b*tan(d*x
+ c))^(1/3)/b^(1/3)))/(b*d)
```

mupad [B] time = 2.70, size = 230, normalized size = 1.03

$$\frac{(-1)^{1/6}\,\mathrm{atan}\left(\frac{(-1)^{5/6}\,(b\tan(c+d\,x))^{1/3}\,1\mathrm{i}}{b^{1/3}}\right)1\mathrm{i}}{b^{2/3}\,d}-\frac{(-1)^{1/6}\,\ln\left((-1)^{1/6}\,b^{1/3}-2\,(b\tan\left(c+d\,x\right))^{1/3}+(-1)^{2/3}\,\sqrt{3}\,b^{1/3}\right)\left(\frac{1}{2}+\frac{\sqrt{3}}{2}\right.}{2\,b^{2/3}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x))^(2/3),x)
```

```
[Out] ((-1)^(1/6)*atan(((-1)^(5/6)*(b*tan(c + d*x))^(1/3)*1i)/b^(1/3))*1i)/(b^(2/
3)*d) - ((-1)^(1/6)*log((-1)^(1/6)*b^(1/3) - 2*(b*tan(c + d*x))^(1/3) + (-1
)^(2/3)*3^(1/2)*b^(1/3))*((3^(1/2)*1i)/2 + 1/2))/(2*b^(2/3)*d) - ((-1)^(1/6
)*log((-1)^(1/6)*b^(1/3) + 2*(b*tan(c + d*x))^(1/3) - (-1)^(2/3)*3^(1/2)*b^
(1/3))*((3^(1/2)*1i)/2 - 1/2))/(2*b^(2/3)*d) + ((-1)^(1/6)*log((-1)^(1/6)*b
^(1/3) + 2*(b*tan(c + d*x))^(1/3) + (-1)^(2/3)*3^(1/2)*b^(1/3))*((3^(1/2)*1
i)/4 + 1/4))/(b^(2/3)*d) + ((-1)^(1/6)*log(2*(b*tan(c + d*x))^(1/3) - (-1)^
(1/6)*b^(1/3) + (-1)^(2/3)*3^(1/2)*b^(1/3))*((3^(1/2)*1i)/4 - 1/4))/(b^(2/3
)*d)
```

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

$$\int\frac{1}{\left(b\tan\left(c+dx\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))**(2/3),x)
```

```
[Out] Integral((b*tan(c + d*x))**(-2/3), x)
```

3.22 $\int \frac{1}{(b\tan(c+dx))^{4/3}}\,dx$

Optimal. Leaf size=245

$$-\frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{4/3}d}+\frac{\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2b^{4/3}d}-\frac{\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2b^{4/3}d}-\frac{\sqrt{3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+\right.}{4b^{4/3}d}$$

```
[Out] -arctan((b*tan(d*x+c))^(1/3)/b^(1/3))/b^(4/3)/d-1/2*arctan(-3^(1/2)+2*(b*ta
n(d*x+c))^(1/3)/b^(1/3))/b^(4/3)/d-1/2*arctan(3^(1/2)+2*(b*tan(d*x+c))^(1/3
)/b^(1/3))/b^(4/3)/d-1/4*ln(b^(2/3)-b^(1/3)*3^(1/2)*(b*tan(d*x+c))^(1/3)+(b
*tan(d*x+c))^(2/3))*3^(1/2)/b^(4/3)/d+1/4*ln(b^(2/3)+b^(1/3)*3^(1/2)*(b*tan
(d*x+c))^(1/3)+(b*tan(d*x+c))^(2/3))*3^(1/2)/b^(4/3)/d-3/b/d/(b*tan(d*x+c))
^(1/3)
```

Rubi [A] time = 0.44, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3474, 3476, 329, 295, 634, 618, 204, 628, 203}

$$-\frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{4/3}d}+\frac{\tan^{-1}\left(\sqrt{3}-\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{2b^{4/3}d}-\frac{\tan^{-1}\left(\frac{2\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}+\sqrt{3}\right)}{2b^{4/3}d}-\frac{\sqrt{3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+\right.}{4b^{4/3}d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^(-4/3),x]
```

```
[Out] -(ArcTan[(b*Tan[c + d*x])^(1/3)/b^(1/3)]/(b^(4/3)*d)) + ArcTan[Sqrt[3] - (2
*(b*Tan[c + d*x])^(1/3))/b^(1/3)]/(2*b^(4/3)*d) - ArcTan[Sqrt[3] + (2*(b*Ta
n[c + d*x])^(1/3))/b^(1/3)]/(2*b^(4/3)*d) - (Sqrt[3]*Log[b^(2/3) - Sqrt[3]*
b^(1/3)*(b*Tan[c + d*x])^(1/3) + (b*Tan[c + d*x])^(2/3)])/(4*b^(4/3)*d) + (
Sqrt[3]*Log[b^(2/3) + Sqrt[3]*b^(1/3)*(b*Tan[c + d*x])^(1/3) + (b*Tan[c + d
*x])^(2/3)])/(4*b^(4/3)*d) - 3/(b*d*(b*Tan[c + d*x])^(1/3))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 295

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Module[{r = Numerator
[Rt[a/b, n]], s = Denominator[Rt[a/b, n]], k, u}, Simp[u = Int[(r*Cos[((2*k
 - 1)*m*Pi)/n] - s*Cos[((2*k - 1)*(m + 1)*Pi)/n]*x)/(r^2 - 2*r*s*Cos[((2*k
- 1)*Pi)/n]*x + s^2*x^2), x] + Int[(r*Cos[((2*k - 1)*m*Pi)/n] + s*Cos[((2*k
 - 1)*(m + 1)*Pi)/n]*x)/(r^2 + 2*r*s*Cos[((2*k - 1)*Pi)/n]*x + s^2*x^2), x]
; (2*(-1)^(m/2)*r^(m + 2)*Int[1/(r^2 + s^2*x^2), x])/(a*n*s^m) + Dist[(2*r^
(m + 1))/(a*n*s^m), Sum[u, {k, 1, (n - 2)/4}], x], x]] /; FreeQ[{a, b}, x]
&& IGtQ[(n - 2)/4, 0] && IGtQ[m, 0] && LtQ[m, n - 1] && PosQ[a/b]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{(b\tan(c+dx))^{4/3}}\,dx = -\frac{3}{bd\sqrt[3]{b\tan(c+dx)}} - \frac{\int (b\tan(c+dx))^{2/3}\,dx}{b^2}$$

$$= -\frac{3}{bd\sqrt[3]{b\tan(c+dx)}} - \frac{\text{Subst}\left(\int \frac{x^{2/3}}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{bd}$$

$$= -\frac{3}{bd\sqrt[3]{b\tan(c+dx)}} - \frac{3\,\text{Subst}\left(\int \frac{x^4}{b^2+x^6}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{bd}$$

$$= -\frac{3}{bd\sqrt[3]{b\tan(c+dx)}} - \frac{\text{Subst}\left(\int \frac{-\frac{\sqrt[3]{b}}{2}+\frac{\sqrt{3}x}{2}}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan(c+dx)}\right)}{b^{4/3}d} - \frac{\text{Subst}\left(\int \frac{-}{b^{2/3}+}\right.}{}$$

$$= -\frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{4/3}d} - \frac{3}{bd\sqrt[3]{b\tan(c+dx)}} - \frac{\sqrt{3}\,\text{Subst}\left(\int \frac{-\sqrt{3}\sqrt[3]{b}+2x}{b^{2/3}-\sqrt{3}\sqrt[3]{b}x+x^2}\,dx, x, \sqrt[3]{b\tan(\right.}{4b^{4/3}d}$$

$$= -\frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{4/3}d} - \frac{\sqrt{3}\log\left(b^{2/3}-\sqrt{3}\sqrt[3]{b}\sqrt[3]{b\tan(c+dx)}+(b\tan(c+dx))^{2/3}\right)}{4b^{4/3}d} + $$

$$= -\frac{\tan^{-1}\left(\frac{\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)}{b^{4/3}d} + \frac{\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}-\frac{6\sqrt[3]{b\tan(c+dx)}}{\sqrt[3]{b}}\right)\right)}{2b^{4/3}d} - \frac{\tan^{-1}\left(\frac{1}{3}\left(3\sqrt{3}+\frac{6\sqrt[3]{b\tan(c+d}}{\sqrt[3]{b}}\right.\right.}{2b^{4/3}d}$$

Mathematica [C] time = 0.06, size = 38, normalized size = 0.16

$$-\frac{3\,{}_2F_1\left(-\frac{1}{6},1;\frac{5}{6};-\tan^2(c+dx)\right)}{bd\sqrt[3]{b\tan(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^(-4/3),x]
[Out] (-3*Hypergeometric2F1[-1/6, 1, 5/6, -Tan[c + d*x]^2])/(b*d*(b*Tan[c + d*x])
^(1/3))
```

fricas [B] time = 0.62, size = 701, normalized size = 2.86

$$12\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{2}{3}}\cos(dx+c)\sin(dx+c)+4\left(b^2d\cos(dx+c)^2-b^2d\right)\left(\frac{1}{b^8d^6}\right)^{\frac{1}{6}}\arctan\left(2\sqrt{\sqrt{3}\,b^7d^5\left(\frac{b\sin(dx+c)}{\cos(dx+c)}\right)^{\frac{1}{3}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(4/3),x, algorithm="fricas")
```

```
[Out] 1/4*(12*(b*sin(d*x + c)/cos(d*x + c))^(2/3)*cos(d*x + c)*sin(d*x + c) + 4*(
b^2*d*cos(d*x + c)^2 - b^2*d)*(1/(b^8*d^6))^(1/6)*arctan(2*sqrt(sqrt(3)*b^7
*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^8*d^6))^(5/6) + b^6*d^4*(1/(
b^8*d^6))^(2/3) + (b*sin(d*x + c)/cos(d*x + c))^(2/3))*b*d*(1/(b^8*d^6))^(1
/6) - 2*b*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^8*d^6))^(1/6) - sqrt(
3)) + 4*(b^2*d*cos(d*x + c)^2 - b^2*d)*(1/(b^8*d^6))^(1/6)*arctan(2*sqrt(-s
qrt(3)*b^7*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^8*d^6))^(5/6) + b^
6*d^4*(1/(b^8*d^6))^(2/3) + (b*sin(d*x + c)/cos(d*x + c))^(2/3))*b*d*(1/(b^
8*d^6))^(1/6) - 2*b*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^8*d^6))^(1/
6) + sqrt(3)) + 8*(b^2*d*cos(d*x + c)^2 - b^2*d)*(1/(b^8*d^6))^(1/6)*arctan
(sqrt(b^6*d^4*(1/(b^8*d^6))^(2/3) + (b*sin(d*x + c)/cos(d*x + c))^(2/3))*b*
d*(1/(b^8*d^6))^(1/6) - b*d*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^8*d^6
))^(1/6)) + (sqrt(3)*b^2*d*cos(d*x + c)^2 - sqrt(3)*b^2*d)*(1/(b^8*d^6))^(1
/6)*log(sqrt(3)*b^7*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^8*d^6))^(
5/6) + b^6*d^4*(1/(b^8*d^6))^(2/3) + (b*sin(d*x + c)/cos(d*x + c))^(2/3)) -
 (sqrt(3)*b^2*d*cos(d*x + c)^2 - sqrt(3)*b^2*d)*(1/(b^8*d^6))^(1/6)*log(-sq
rt(3)*b^7*d^5*(b*sin(d*x + c)/cos(d*x + c))^(1/3)*(1/(b^8*d^6))^(5/6) + b^6
*d^4*(1/(b^8*d^6))^(2/3) + (b*sin(d*x + c)/cos(d*x + c))^(2/3)))/(b^2*d*cos
(d*x + c)^2 - b^2*d)
```

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

$$\int \frac{1}{(b\tan(dx+c))^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(4/3),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c))^(-4/3), x)
```

maple [A] time = 0.12, size = 227, normalized size = 0.93

$$-\frac{\sqrt{3}\,\left(b^{2}\right)^{\frac{5}{6}}\ln\left(\left(b\tan\left(dx+c\right)\right)^{\frac{2}{3}}-\sqrt{3}\,\left(b^{2}\right)^{\frac{1}{6}}\left(b\tan\left(dx+c\right)\right)^{\frac{1}{3}}+\left(b^{2}\right)^{\frac{1}{3}}\right)}{4d\,b^{3}}-\frac{\arctan\left(\frac{2\left(b\tan(dx+c)\right)^{\frac{1}{3}}}{\left(b^{2}\right)^{\frac{1}{6}}}-\sqrt{3}\right)}{2db\left(b^{2}\right)^{\frac{1}{6}}}-\frac{\arctan\left(\frac{(b}{}\right.}{db\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c))^(4/3),x)
```

```
[Out] -1/4/d/b^3*3^(1/2)*(b^2)^(5/6)*ln((b*tan(d*x+c))^(2/3)-3^(1/2)*(b^2)^(1/6)*
(b*tan(d*x+c))^(1/3)+(b^2)^(1/3))-1/2/d/b/(b^2)^(1/6)*arctan(2*(b*tan(d*x+c
))^(1/3)/(b^2)^(1/6)-3^(1/2))-1/d/b/(b^2)^(1/6)*arctan((b*tan(d*x+c))^(1/3)
/(b^2)^(1/6))+1/4/d/b^3*3^(1/2)*(b^2)^(5/6)*ln((b*tan(d*x+c))^(2/3)+3^(1/2)
*(b^2)^(1/6)*(b*tan(d*x+c))^(1/3)+(b^2)^(1/3))-1/2/d/b/(b^2)^(1/6)*arctan(2
*(b*tan(d*x+c))^(1/3)/(b^2)^(1/6)+3^(1/2))-3/b/d/(b*tan(d*x+c))^(1/3)
```

maxima [A] time = 0.73, size = 182, normalized size = 0.74

$$\frac{\frac{\sqrt{3}\log\left(\sqrt{3}\left(b\tan(dx+c)\right)^{\frac{1}{3}}b^{\frac{1}{3}}+\left(b\tan(dx+c)\right)^{\frac{2}{3}}+b^{\frac{2}{3}}\right)}{b^{\frac{1}{3}}}-\frac{\sqrt{3}\log\left(-\sqrt{3}\left(b\tan(dx+c)\right)^{\frac{1}{3}}b^{\frac{1}{3}}+\left(b\tan(dx+c)\right)^{\frac{2}{3}}+b^{\frac{2}{3}}\right)}{b^{\frac{1}{3}}}-\frac{2\arctan\left(\frac{\sqrt{3}b^{\frac{1}{3}}+2\left(b\tan(dx+c)\right)^{\frac{1}{3}}}{b^{\frac{1}{3}}}\right)}{b^{\frac{1}{3}}}-}{4\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))^(4/3),x, algorithm="maxima")
```

```
[Out] 1/4*(sqrt(3)*log(sqrt(3)*(b*tan(d*x + c))^(1/3)*b^(1/3) + (b*tan(d*x + c))^
(2/3) + b^(2/3))/b^(1/3) - sqrt(3)*log(-sqrt(3)*(b*tan(d*x + c))^(1/3)*b^(1
/3) + (b*tan(d*x + c))^(2/3) + b^(2/3))/b^(1/3) - 2*arctan((sqrt(3)*b^(1/3)
 + 2*(b*tan(d*x + c))^(1/3))/b^(1/3))/b^(1/3) - 2*arctan(-(sqrt(3)*b^(1/3)
- 2*(b*tan(d*x + c))^(1/3))/b^(1/3))/b^(1/3) - 4*arctan((b*tan(d*x + c))^(1
/3)/b^(1/3))/b^(1/3) - 12/(b*tan(d*x + c))^(1/3))/(b*d)
```

mupad [B] time = 2.55, size = 278, normalized size = 1.13

$$-\frac{3}{b\,d\,\left(b\tan\left(c+d\,x\right)\right)^{1/3}}-\frac{(-1)^{1/6}\,\mathrm{atan}\left(\frac{(-1)^{2/3}\,\left(b\tan(c+d\,x)\right)^{1/3}}{b^{1/3}}\right)\,1\mathrm{i}}{b^{4/3}\,d}-\frac{(-1)^{1/6}\,\ln\left(972\,b^{12}\,d^{6}-972\,(-1)^{1/6}\,b^{35/3}\,d^{6}\,\left(-\frac{1}{2}+\right.\right.}{2\,b^{4/3}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x))^(4/3),x)
```

```
[Out] ((-1)^(1/6)*log(972*b^12*d^6 + 1944*(-1)^(1/6)*b^(35/3)*d^6*((3^(1/2)*1i)/4
 - 1/4)*(b*tan(c + d*x))^(1/3))*((3^(1/2)*1i)/4 - 1/4))/(b^(4/3)*d) - ((-1)
^(1/6)*atan(((-1)^(2/3)*(b*tan(c + d*x))^(1/3))/b^(1/3))*1i)/(b^(4/3)*d) -
((-1)^(1/6)*log(972*b^12*d^6 - 972*(-1)^(1/6)*b^(35/3)*d^6*((3^(1/2)*1i)/2
- 1/2)*(b*tan(c + d*x))^(1/3))*((3^(1/2)*1i)/2 - 1/2))/(2*b^(4/3)*d) - ((-1
)^(1/6)*log(972*b^12*d^6 - 972*(-1)^(1/6)*b^(35/3)*d^6*((3^(1/2)*1i)/2 + 1/
2)*(b*tan(c + d*x))^(1/3))*((3^(1/2)*1i)/2 + 1/2))/(2*b^(4/3)*d) - 3/(b*d*(
b*tan(c + d*x))^(1/3)) + ((-1)^(1/6)*log(972*b^12*d^6 + 1944*(-1)^(1/6)*b^(
35/3)*d^6*((3^(1/2)*1i)/4 + 1/4)*(b*tan(c + d*x))^(1/3))*((3^(1/2)*1i)/4 +
1/4))/(b^(4/3)*d)
```

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

$$\int \frac{1}{(b\tan(c+dx))^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c))**(4/3),x)
```

```
[Out] Integral((b*tan(c + d*x))**(-4/3), x)
```

3.23 $\int (b\tan(c+dx))^n\,dx$

Optimal. Leaf size=50

$$\frac{(b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(c+dx)\right)}{bd(n+1)}$$

```
[Out] hypergeom([1, 1/2+1/2*n],[3/2+1/2*n],-tan(d*x+c)^2)*(b*tan(d*x+c))^(1+n)/b/
d/(1+n)
```

Rubi [A] time = 0.03, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {3476, 364}

$$\frac{(b\tan(c+dx))^{n+1}\,{}_2F_1\left(1,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(c+dx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x])^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + n)/2, (3 + n)/2, -Tan[c + d*x]^2]*(b*Tan[c + d*x
])^(1 + n))/(b*d*(1 + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int (b\tan(c+dx))^n\,dx = \frac{b\,\text{Subst}\left(\int \frac{x^n}{b^2+x^2}\,dx, x, b\tan(c+dx)\right)}{d}$$
$$= \frac{{}_2F_1\left(1, \frac{1+n}{2}; \frac{3+n}{2}; -\tan^2(c+dx)\right)(b\tan(c+dx))^{1+n}}{bd(1+n)}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 1.06

$$\frac{\tan(c+dx)(b\tan(c+dx))^n\,{}_2F_1\left(1, \frac{n+1}{2}; \frac{n+1}{2}+1; -\tan^2(c+dx)\right)}{d(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x])^n,x]
[Out] (Hypergeometric2F1[1, (1 + n)/2, 1 + (1 + n)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]*(b*Tan[c + d*x])^n)/(d*(1 + n))
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left((b\tan(dx+c))^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^n,x, algorithm="fricas")
[Out] integral((b*tan(d*x + c))^n, x)
```

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

$$\int (b\tan(dx+c))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^n,x, algorithm="giac")
[Out] integrate((b*tan(d*x + c))^n, x)
```

maple [F] time = 0.68, size = 0, normalized size = 0.00

$$\int (b\tan(dx+c))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c))^n,x)
```

```
[Out] int((b*tan(d*x+c))^n,x)
```

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

$$\int (b\tan(dx+c))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*tan(d*x + c))^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int (b\tan(c+d\,x))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x))^n,x)
```

```
[Out] int((b*tan(c + d*x))^n, x)
```

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

$$\int (b\tan(c+dx))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c))**n,x)
```

```
[Out] Integral((b*tan(c + d*x))**n, x)
```

3.24 $\int \left(b\tan^2(c+dx)\right)^{5/2}\,dx$

Optimal. Leaf size=98

$$-\frac{b^2\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d}+\frac{b^2\tan^3(c+dx)\sqrt{b\tan^2(c+dx)}}{4d}-\frac{b^2\cot(c+dx)\sqrt{b\tan^2(c+dx)}\,\log(\cos(c+d}{d}$$

```
[Out] -b^2*cot(d*x+c)*ln(cos(d*x+c))*(b*tan(d*x+c)^2)^(1/2)/d-1/2*b^2*(b*tan(d*x+
c)^2)^(1/2)*tan(d*x+c)/d+1/4*b^2*(b*tan(d*x+c)^2)^(1/2)*tan(d*x+c)^3/d
```

Rubi [A] time = 0.04, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 3475}

$$\frac{b^2\tan^3(c+dx)\sqrt{b\tan^2(c+dx)}}{4d}-\frac{b^2\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d}-\frac{b^2\cot(c+dx)\sqrt{b\tan^2(c+dx)}\,\log(\cos(c+dx}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^2)^(5/2),x]
```

```
[Out] -((b^2*Cot[c + d*x]*Log[Cos[c + d*x]]*Sqrt[b*Tan[c + d*x]^2])/d) - (b^2*Tan
[c + d*x]*Sqrt[b*Tan[c + d*x]^2])/(2*d) + (b^2*Tan[c + d*x]^3*Sqrt[b*Tan[c
+ d*x]^2])/(4*d)
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^2(c+dx)\right)^{5/2}\,dx = \left(b^2\cot(c+dx)\sqrt{b\tan^2(c+dx)}\right)\int \tan^5(c+dx)\,dx$$
$$= \frac{b^2\tan^3(c+dx)\sqrt{b\tan^2(c+dx)}}{4d} - \left(b^2\cot(c+dx)\sqrt{b\tan^2(c+dx)}\right)\int \tan^3(c+dx)\,dx$$
$$= -\frac{b^2\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d} + \frac{b^2\tan^3(c+dx)\sqrt{b\tan^2(c+dx)}}{4d} + \left(b^2\cot(c+dx)\right.$$
$$= -\frac{b^2\cot(c+dx)\log(\cos(c+dx))\sqrt{b\tan^2(c+dx)}}{d} - \frac{b^2\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d} +$$

Mathematica [A] time = 0.38, size = 56, normalized size = 0.57

$$-\frac{\cot(c+dx)\left(b\tan^2(c+dx)\right)^{5/2}\left(2\cot^2(c+dx)+4\cot^4(c+dx)\log(\cos(c+dx))-1\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^2)^(5/2),x]
```

```
[Out] -1/4*(Cot[c + d*x]*(-1 + 2*Cot[c + d*x]^2 + 4*Cot[c + d*x]^4*Log[Cos[c + d*
x]])*(b*Tan[c + d*x]^2)^(5/2))/d
```

fricas [A] time = 0.63, size = 74, normalized size = 0.76

$$\frac{\left(b^2\tan\left(dx+c\right)^4-2\,b^2\tan\left(dx+c\right)^2-2\,b^2\log\left(\frac{1}{\tan\left(dx+c\right)^2+1}\right)-3\,b^2\right)\sqrt{b\tan\left(dx+c\right)^2}}{4\,d\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/4*(b^2*tan(d*x + c)^4 - 2*b^2*tan(d*x + c)^2 - 2*b^2*log(1/(tan(d*x + c)^
2 + 1)) - 3*b^2)*sqrt(b*tan(d*x + c)^2)/(d*tan(d*x + c))
```

giac [B] time = 5.71, size = 696, normalized size = 7.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/4*(2*b^2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*sgn(tan(d*x +
 c))*tan(d*x)^4*tan(c)^4 + 3*b^2*sgn(tan(d*x + c))*tan(d*x)^4*tan(c)^4 - 8*
b^2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
+ tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*sgn(tan(d*x + c))*tan
(d*x)^3*tan(c)^3 + 2*b^2*sgn(tan(d*x + c))*tan(d*x)^4*tan(c)^2 - 8*b^2*sgn(
tan(d*x + c))*tan(d*x)^3*tan(c)^3 + 2*b^2*sgn(tan(d*x + c))*tan(d*x)^2*tan(
c)^4 + 12*b^2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2
*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*sgn(tan(d*x
 + c))*tan(d*x)^2*tan(c)^2 - b^2*sgn(tan(d*x + c))*tan(d*x)^4 - 8*b^2*sgn(t
an(d*x + c))*tan(d*x)^3*tan(c) + 4*b^2*sgn(tan(d*x + c))*tan(d*x)^2*tan(c)^
2 - 8*b^2*sgn(tan(d*x + c))*tan(d*x)*tan(c)^3 - b^2*sgn(tan(d*x + c))*tan(c
)^4 - 8*b^2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*t
an(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*sgn(tan(d*x +
 c))*tan(d*x)*tan(c) + 2*b^2*sgn(tan(d*x + c))*tan(d*x)^2 - 8*b^2*sgn(tan(d
*x + c))*tan(d*x)*tan(c) + 2*b^2*sgn(tan(d*x + c))*tan(c)^2 + 2*b^2*log(4*(
tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^
2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*sgn(tan(d*x + c)) + 3*b^2*sgn(ta
n(d*x + c)))*sqrt(b)/(d*tan(d*x)^4*tan(c)^4 - 4*d*tan(d*x)^3*tan(c)^3 + 6*d
*tan(d*x)^2*tan(c)^2 - 4*d*tan(d*x)*tan(c) + d)
```

maple [A] time = 0.15, size = 58, normalized size = 0.59

$$\frac{\left(b\left(\tan^2\left(dx+c\right)\right)\right)^{\frac{5}{2}}\left(\tan^4\left(dx+c\right)-2\left(\tan^2\left(dx+c\right)\right)+2\ln\left(1+\tan^2\left(dx+c\right)\right)\right)}{4d\tan\left(dx+c\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^2)^(5/2),x)
```

```
[Out] 1/4/d*(b*tan(d*x+c)^2)^(5/2)*(tan(d*x+c)^4-2*tan(d*x+c)^2+2*ln(1+tan(d*x+c)
^2))/tan(d*x+c)^5
```

maxima [A] time = 0.78, size = 47, normalized size = 0.48

$$\frac{b^{\frac{5}{2}}\tan\left(dx+c\right)^4-2\,b^{\frac{5}{2}}\tan\left(dx+c\right)^2+2\,b^{\frac{5}{2}}\log\left(\tan\left(dx+c\right)^2+1\right)}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^(5/2)*tan(d*x + c)^4 - 2*b^(5/2)*tan(d*x + c)^2 + 2*b^(5/2)*log(tan(
d*x + c)^2 + 1))/d
```

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

$$\int \left(b\tan\left(c+d\,x\right)^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^2)^(5/2),x)
[Out] int((b*tan(c + d*x)^2)^(5/2), x)
```

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

$$\int \left(b\tan^2\left(c+dx\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**2)**(5/2),x)
[Out] Integral((b*tan(c + d*x)**2)**(5/2), x)
```

3.25 $\int \left(b\tan^2(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=61

$$\frac{b\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d}+\frac{b\cot(c+dx)\sqrt{b\tan^2(c+dx)}\,\log(\cos(c+dx))}{d}$$

```
[Out] b*cot(d*x+c)*ln(cos(d*x+c))*(b*tan(d*x+c)^2)^(1/2)/d+1/2*b*(b*tan(d*x+c)^2)
^(1/2)*tan(d*x+c)/d
```

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 3475}

$$\frac{b\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d}+\frac{b\cot(c+dx)\sqrt{b\tan^2(c+dx)}\,\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^2)^(3/2),x]
```

```
[Out] (b*Cot[c + d*x]*Log[Cos[c + d*x]]*Sqrt[b*Tan[c + d*x]^2])/d + (b*Tan[c + d*
x]*Sqrt[b*Tan[c + d*x]^2])/(2*d)
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^2(c+dx)\right)^{3/2}\,dx = \left(b\cot(c+dx)\sqrt{b\tan^2(c+dx)}\right)\int \tan^3(c+dx)\,dx$$
$$= \frac{b\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d} - \left(b\cot(c+dx)\sqrt{b\tan^2(c+dx)}\right)\int \tan(c+dx)\,dx$$
$$= \frac{b\cot(c+dx)\log(\cos(c+dx))\sqrt{b\tan^2(c+dx)}}{d} + \frac{b\tan(c+dx)\sqrt{b\tan^2(c+dx)}}{2d}$$

Mathematica [**A**] time = 0.11, size = 47, normalized size = 0.77

$$\frac{\cot^3(c+dx)\left(b\tan^2(c+dx)\right)^{3/2}\left(\tan^2(c+dx)+2\log(\cos(c+dx))\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^2)^(3/2),x]
```

```
[Out] (Cot[c + d*x]^3*(b*Tan[c + d*x]^2)^(3/2)*(2*Log[Cos[c + d*x]] + Tan[c + d*x
]^2))/(2*d)
```

fricas [**A**] time = 0.57, size = 52, normalized size = 0.85

$$\frac{\left(b\tan(dx+c)^2 + b\log\left(\frac{1}{\tan(dx+c)^2+1}\right)+b\right)\sqrt{b\tan(dx+c)^2}}{2\,d\tan(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(b*tan(d*x + c)^2 + b*log(1/(tan(d*x + c)^2 + 1)) + b)*sqrt(b*tan(d*x +
 c)^2)/(d*tan(d*x + c))
```

giac [**B**] time = 1.85, size = 256, normalized size = 4.20

$$\left(\log\left(\frac{4\left(\tan(dx)^4\tan(c)^2-2\tan(dx)^3\tan(c)+\tan(dx)^2\tan(c)^2+\tan(dx)^2-2\tan(dx)\tan(c)+1\right)}{\tan(c)^2+1}\right)\tan(dx)^2\tan(c)^2+\tan(dx)^2\tan(c)^2-2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2
 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))*tan(d*x)^2*tan(c)^2
+ tan(d*x)^2*tan(c)^2 - 2*log(4*(tan(d*x)^4*tan(c)^2 - 2*tan(d*x)^3*tan(c)
+ tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1)/(tan(c)^2 + 1))
*tan(d*x)*tan(c) + tan(d*x)^2 + tan(c)^2 + log(4*(tan(d*x)^4*tan(c)^2 - 2*t
an(d*x)^3*tan(c) + tan(d*x)^2*tan(c)^2 + tan(d*x)^2 - 2*tan(d*x)*tan(c) + 1
)/(tan(c)^2 + 1)) + 1)*b^(3/2)*sgn(tan(d*x + c))/(d*tan(d*x)^2*tan(c)^2 - 2
*d*tan(d*x)*tan(c) + d)
```

maple [A] time = 0.12, size = 48, normalized size = 0.79

$$-\frac{\left(b\left(\tan^2\left(dx+c\right)\right)\right)^{\frac{3}{2}}\left(-\left(\tan^2\left(dx+c\right)\right)+\ln\left(1+\tan^2\left(dx+c\right)\right)\right)}{2d\tan\left(dx+c\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^2)^(3/2),x)
```

```
[Out] -1/2/d*(b*tan(d*x+c)^2)^(3/2)*(-tan(d*x+c)^2+ln(1+tan(d*x+c)^2))/tan(d*x+c)
^3
```

maxima [A] time = 0.59, size = 34, normalized size = 0.56

$$\frac{b^{\frac{3}{2}}\tan\left(dx+c\right)^2-b^{\frac{3}{2}}\log\left(\tan\left(dx+c\right)^2+1\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*(b^(3/2)*tan(d*x + c)^2 - b^(3/2)*log(tan(d*x + c)^2 + 1))/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(b\,{\mathrm{tan}\left(c+d\,x\right)}^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^2)^(3/2),x)
```

```
[Out] int((b*tan(c + d*x)^2)^(3/2), x)
```

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

$$\int \left(b \tan^{2}{\left(c + d x \right)}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**2)**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**2)**(3/2), x)
```

3.26 $\int \sqrt{b\tan^2(c+dx)}\,dx$

Optimal. Leaf size=32

$$-\frac{\cot(c+dx)\sqrt{b\tan^2(c+dx)}\,\log(\cos(c+dx))}{d}$$

```
[Out] -cot(d*x+c)*ln(cos(d*x+c))*(b*tan(d*x+c)^2)^(1/2)/d
```

Rubi [A] time = 0.02, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3658, 3475}

$$-\frac{\cot(c+dx)\sqrt{b\tan^2(c+dx)}\,\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[c + d*x]^2],x]
```

```
[Out] -((Cot[c + d*x]*Log[Cos[c + d*x]]*Sqrt[b*Tan[c + d*x]^2])/d)
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] && !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int \sqrt{b\tan^2(c+dx)}\,dx &= \left(\cot(c+dx)\sqrt{b\tan^2(c+dx)}\right)\int \tan(c+dx)\,dx\\ &= -\frac{\cot(c+dx)\log(\cos(c+dx))\sqrt{b\tan^2(c+dx)}}{d}\end{aligned}$$

Mathematica [A] time = 0.04, size = 32, normalized size = 1.00

$$-\frac{\cot(c+dx)\sqrt{b\tan^2(c+dx)}\,\log(\cos(c+dx))}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[c + d*x]^2],x]
[Out] -((Cot[c + d*x]*Log[Cos[c + d*x]]*Sqrt[b*Tan[c + d*x]^2])/d)
```

fricas [A] time = 1.36, size = 38, normalized size = 1.19

$$-\frac{\sqrt{b\tan\left(dx+c\right)^2}\,\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(1/2),x, algorithm="fricas")
[Out] -1/2*sqrt(b*tan(d*x + c)^2)*log(1/(tan(d*x + c)^2 + 1))/(d*tan(d*x + c))
```

giac [A] time = 0.53, size = 23, normalized size = 0.72

$$-\frac{\sqrt{b}\,\log\left(|\cos\left(dx+c\right)|\right)\mathrm{sgn}\left(\tan\left(dx+c\right)\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(1/2),x, algorithm="giac")
[Out] -sqrt(b)*log(abs(cos(d*x + c)))*sgn(tan(d*x + c))/d
```

maple [A] time = 0.14, size = 37, normalized size = 1.16

$$\frac{\sqrt{b\left(\tan^2\left(dx+c\right)\right)}\,\ln\left(1+\tan^2\left(dx+c\right)\right)}{2d\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^2)^(1/2),x)
[Out] 1/2/d*(b*tan(d*x+c)^2)^(1/2)/tan(d*x+c)*ln(1+tan(d*x+c)^2)
```

maxima [A] time = 0.57, size = 19, normalized size = 0.59

$$\frac{\sqrt{b}\,\log\left(\tan\left(dx+c\right)^2+1\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b)*log(tan(d*x + c)^2 + 1)/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \sqrt{b \tan \left(c + d\, x\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^2)^(1/2),x)
```

```
[Out] int((b*tan(c + d*x)^2)^(1/2), x)
```

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

$$\int \sqrt{b \tan^{2}{\left(c + dx \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**2)**(1/2),x)
```

```
[Out] Integral(sqrt(b*tan(c + d*x)**2), x)
```

3.27 $\int \frac{1}{\sqrt{b \tan^2(c+dx)}} \, dx$

Optimal. Leaf size=31

$$\frac{\tan(c+dx)\log(\sin(c+dx))}{d\sqrt{b\tan^2(c+dx)}}$$

```
[Out] ln(sin(d*x+c))*tan(d*x+c)/d/(b*tan(d*x+c)^2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3658, 3475}

$$\frac{\tan(c+dx)\log(\sin(c+dx))}{d\sqrt{b\tan^2(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[b*Tan[c + d*x]^2],x]
```

```
[Out] (Log[Sin[c + d*x]]*Tan[c + d*x])/(d*Sqrt[b*Tan[c + d*x]^2])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{b\tan^2(c+dx)}}\,dx &= \frac{\tan(c+dx)\int \cot(c+dx)\,dx}{\sqrt{b\tan^2(c+dx)}}\\ &= \frac{\log(\sin(c+dx))\tan(c+dx)}{d\sqrt{b\tan^2(c+dx)}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 39, normalized size = 1.26

$$\frac{\tan(c+dx)(\log(\tan(c+dx))+\log(\cos(c+dx)))}{d\sqrt{b\tan^2(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[b*Tan[c + d*x]^2],x]
```

```
[Out] ((Log[Cos[c + d*x]] + Log[Tan[c + d*x]])*Tan[c + d*x])/(d*Sqrt[b*Tan[c + d*
x]^2])
```

fricas [A] time = 1.34, size = 50, normalized size = 1.61

$$\frac{\sqrt{b\tan\left(dx+c\right)^2}\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)}{2\,bd\tan\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(b*tan(d*x + c)^2)*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))/(b*d*ta
n(d*x + c))
```

giac [B] time = 0.51, size = 81, normalized size = 2.61

$$\frac{\frac{\log\left(\frac{|-\cos(dx+c)+1|}{|\cos(dx+c)+1|}\right)}{\sqrt{b}\operatorname{sgn}(\tan(dx+c))}-\frac{2\log\left(\left|-\frac{\cos(dx+c)-1}{\cos(dx+c)+1}+1\right|\right)}{\sqrt{b}\operatorname{sgn}(\tan(dx+c))}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(log(abs(-cos(d*x + c) + 1)/abs(cos(d*x + c) + 1))/(sqrt(b)*sgn(tan(d*x
 + c))) - 2*log(abs(-(cos(d*x + c) - 1)/(cos(d*x + c) + 1) + 1))/(sqrt(b)*s
gn(tan(d*x + c))))/d
```

maple [A] time = 0.16, size = 47, normalized size = 1.52

$$\frac{\tan\left(dx+c\right)\left(2\ln\left(\tan\left(dx+c\right)\right)-\ln\left(1+\tan^2\left(dx+c\right)\right)\right)}{2d\sqrt{b\left(\tan^2\left(dx+c\right)\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^2)^(1/2),x)
```

```
[Out] 1/2/d*tan(d*x+c)*(2*ln(tan(d*x+c))-ln(1+tan(d*x+c)^2))/(b*tan(d*x+c)^2)^(1/
2)
```

maxima [A] time = 0.84, size = 33, normalized size = 1.06

$$-\frac{\frac{\log\left(\tan(dx+c)^2+1\right)}{\sqrt{b}}-\frac{2\log(\tan(dx+c))}{\sqrt{b}}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*(log(tan(d*x + c)^2 + 1)/sqrt(b) - 2*log(tan(d*x + c))/sqrt(b))/d
```

mupad [B] time = 2.45, size = 34, normalized size = 1.10

$$\frac{\operatorname{atan}\left(\frac{\sqrt{-b}\,\tan(c+d\,x)}{\sqrt{b\tan(c+d\,x)^2}}\right)}{\sqrt{-b}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^2)^(1/2),x)
```

```
[Out] atan(((-b)^(1/2)*tan(c + d*x))/(b*tan(c + d*x)^2)^(1/2))/((-b)^(1/2)*d)
```

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

$$\int\frac{1}{\sqrt{b\tan^2(c+dx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**2)**(1/2),x)
```

```
[Out] Integral(1/sqrt(b*tan(c + d*x)**2), x)
```

3.28 $\int \frac{1}{\left(b\tan^2(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{\cot(c+dx)}{2bd\sqrt{b\tan^2(c+dx)}}-\frac{\tan(c+dx)\log(\sin(c+dx))}{bd\sqrt{b\tan^2(c+dx)}}$$

```
[Out] -1/2*cot(d*x+c)/b/d/(b*tan(d*x+c)^2)^(1/2)-ln(sin(d*x+c))*tan(d*x+c)/b/d/(b
*tan(d*x+c)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 3475}

$$-\frac{\cot(c+dx)}{2bd\sqrt{b\tan^2(c+dx)}}-\frac{\tan(c+dx)\log(\sin(c+dx))}{bd\sqrt{b\tan^2(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^2)^(-3/2),x]
```

```
[Out] -Cot[c + d*x]/(2*b*d*Sqrt[b*Tan[c + d*x]^2]) - (Log[Sin[c + d*x]]*Tan[c + d
*x])/(b*d*Sqrt[b*Tan[c + d*x]^2])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$
\begin{aligned}
\int \frac{1}{\left(b\tan^2(c+dx)\right)^{3/2}}\,dx &= \frac{\tan(c+dx)\int \cot^3(c+dx)\,dx}{b\sqrt{b\tan^2(c+dx)}}\\
&= -\frac{\cot(c+dx)}{2bd\sqrt{b\tan^2(c+dx)}} - \frac{\tan(c+dx)\int \cot(c+dx)\,dx}{b\sqrt{b\tan^2(c+dx)}}\\
&= -\frac{\cot(c+dx)}{2bd\sqrt{b\tan^2(c+dx)}} - \frac{\log(\sin(c+dx))\tan(c+dx)}{bd\sqrt{b\tan^2(c+dx)}}
\end{aligned}
$$

Mathematica [A] time = 0.39, size = 56, normalized size = 0.85

$$
-\frac{\tan^3(c+dx)\left(\cot^2(c+dx)+2\log(\tan(c+dx))+2\log(\cos(c+dx))\right)}{2d\left(b\tan^2(c+dx)\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^2)^(-3/2),x]
```

```
[Out] -1/2*((Cot[c + d*x]^2 + 2*Log[Cos[c + d*x]] + 2*Log[Tan[c + d*x]])*Tan[c +
d*x]^3)/(d*(b*Tan[c + d*x]^2)^(3/2))
```

fricas [A] time = 0.83, size = 69, normalized size = 1.05

$$
-\frac{\sqrt{b\tan\left(dx+c\right)^2}\left(\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^2+\tan\left(dx+c\right)^2+1\right)}{2\,b^2d\tan\left(dx+c\right)^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(b*tan(d*x + c)^2)*(log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*tan(d
*x + c)^2 + tan(d*x + c)^2 + 1)/(b^2*d*tan(d*x + c)^3)
```

giac [B] time = 3.43, size = 208, normalized size = 3.15

$$
-\frac{\frac{\operatorname{sgn}\left(-\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+1\right)\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2}{\operatorname{sgn}\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right)} - \frac{8\,\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+1\right)\operatorname{sgn}\left(-\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+1\right)}{\operatorname{sgn}\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right)} + \frac{4\,\log\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2\right)\operatorname{sgn}\left(-\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right.\right.}{\operatorname{sgn}\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right)}}{8\,b^{\frac{3}{2}}d}
$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*tan(d*x+c)^2)^(3/2),x, algorithm="giac")

[Out] -1/8*(sgn(-tan(1/2*d*x + 1/2*c)^2 + 1)*tan(1/2*d*x + 1/2*c)^2/sgn(tan(1/2*d*x + 1/2*c)) - 8*log(tan(1/2*d*x + 1/2*c)^2 + 1)*sgn(-tan(1/2*d*x + 1/2*c)^2 + 1)/sgn(tan(1/2*d*x + 1/2*c)) + 4*log(tan(1/2*d*x + 1/2*c)^2)*sgn(-tan(1/2*d*x + 1/2*c)^2 + 1)/sgn(tan(1/2*d*x + 1/2*c)) - (4*sgn(-tan(1/2*d*x + 1/2*c)^2 + 1)*tan(1/2*d*x + 1/2*c)^2 - sgn(-tan(1/2*d*x + 1/2*c)^2 + 1))/(sgn(tan(1/2*d*x + 1/2*c))*tan(1/2*d*x + 1/2*c)^2))/(b^(3/2)*d)

maple [A] time = 0.15, size = 64, normalized size = 0.97

$$-\frac{\tan\left(dx+c\right)\left(2\ln\left(\tan\left(dx+c\right)\right)\left(\tan^{2}\left(dx+c\right)\right)-\ln\left(1+\tan^{2}\left(dx+c\right)\right)\left(\tan^{2}\left(dx+c\right)\right)+1\right)}{2d\left(b\left(\tan^{2}\left(dx+c\right)\right)\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(b*tan(d*x+c)^2)^(3/2),x)

[Out] -1/2/d*tan(d*x+c)*(2*ln(tan(d*x+c))*tan(d*x+c)^2-ln(1+tan(d*x+c)^2)*tan(d*x+c)^2+1)/(b*tan(d*x+c)^2)^(3/2)

maxima [A] time = 0.48, size = 46, normalized size = 0.70

$$\frac{\frac{\log\left(\tan\left(dx+c\right)^{2}+1\right)}{b^{\frac{3}{2}}}-\frac{2\,\log\left(\tan\left(dx+c\right)\right)}{b^{\frac{3}{2}}}-\frac{1}{b^{\frac{3}{2}}\tan\left(dx+c\right)^{2}}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(b*tan(d*x+c)^2)^(3/2),x, algorithm="maxima")

[Out] 1/2*(log(tan(d*x + c)^2 + 1)/b^(3/2) - 2*log(tan(d*x + c))/b^(3/2) - 1/(b^(3/2)*tan(d*x + c)^2))/d

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{{\left(b\,{\mathrm{tan}\left(c+d\,x\right)}^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(b*tan(c + d*x)^2)^(3/2),x)

[Out] int(1/(b*tan(c + d*x)^2)^(3/2), x)

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

$$\int \frac{1}{\left(b\tan^{2}\left(c+dx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**2)**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**2)**(-3/2), x)
```

3.29 $\int \frac{1}{\left(b\tan^2(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=97

$$-\frac{\cot^3(c+dx)}{4b^2d\sqrt{b\tan^2(c+dx)}}+\frac{\cot(c+dx)}{2b^2d\sqrt{b\tan^2(c+dx)}}+\frac{\tan(c+dx)\log(\sin(c+dx))}{b^2d\sqrt{b\tan^2(c+dx)}}$$

```
[Out] 1/2*cot(d*x+c)/b^2/d/(b*tan(d*x+c)^2)^(1/2)-1/4*cot(d*x+c)^3/b^2/d/(b*tan(d
*x+c)^2)^(1/2)+ln(sin(d*x+c))*tan(d*x+c)/b^2/d/(b*tan(d*x+c)^2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 3475}

$$-\frac{\cot^3(c+dx)}{4b^2d\sqrt{b\tan^2(c+dx)}}+\frac{\cot(c+dx)}{2b^2d\sqrt{b\tan^2(c+dx)}}+\frac{\tan(c+dx)\log(\sin(c+dx))}{b^2d\sqrt{b\tan^2(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^2)^(-5/2),x]
```

```
[Out] Cot[c + d*x]/(2*b^2*d*Sqrt[b*Tan[c + d*x]^2]) - Cot[c + d*x]^3/(4*b^2*d*Sqr
t[b*Tan[c + d*x]^2]) + (Log[Sin[c + d*x]]*Tan[c + d*x])/(b^2*d*Sqrt[b*Tan[c
 + d*x]^2])
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
```

```
FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\left(b\tan^2(c+dx)\right)^{5/2}}\,dx &= \frac{\tan(c+dx)\int \cot^5(c+dx)\,dx}{b^2\sqrt{b\tan^2(c+dx)}}\\ &= -\frac{\cot^3(c+dx)}{4b^2d\sqrt{b\tan^2(c+dx)}}-\frac{\tan(c+dx)\int \cot^3(c+dx)\,dx}{b^2\sqrt{b\tan^2(c+dx)}}\\ &= \frac{\cot(c+dx)}{2b^2d\sqrt{b\tan^2(c+dx)}}-\frac{\cot^3(c+dx)}{4b^2d\sqrt{b\tan^2(c+dx)}}+\frac{\tan(c+dx)\int \cot(c+dx)\,dx}{b^2\sqrt{b\tan^2(c+dx)}}\\ &= \frac{\cot(c+dx)}{2b^2d\sqrt{b\tan^2(c+dx)}}-\frac{\cot^3(c+dx)}{4b^2d\sqrt{b\tan^2(c+dx)}}+\frac{\log(\sin(c+dx))\tan(c+dx)}{b^2d\sqrt{b\tan^2(c+dx)}}\end{aligned}$$

Mathematica [A] time = 0.27, size = 68, normalized size = 0.70

$$\frac{\tan^5(c+dx)\left(-\cot^4(c+dx)+2\cot^2(c+dx)+4\log(\tan(c+dx))+4\log(\cos(c+dx))\right)}{4d\left(b\tan^2(c+dx)\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^2)^(-5/2),x]
```

```
[Out] ((2*Cot[c + d*x]^2 - Cot[c + d*x]^4 + 4*Log[Cos[c + d*x]] + 4*Log[Tan[c + d
*x]])*Tan[c + d*x]^5)/(4*d*(b*Tan[c + d*x]^2)^(5/2))
```

fricas [A] time = 0.61, size = 82, normalized size = 0.85

$$\frac{\left(2\,\log\left(\frac{\tan(dx+c)^2}{\tan(dx+c)^2+1}\right)\tan\left(dx+c\right)^4+3\,\tan\left(dx+c\right)^4+2\,\tan\left(dx+c\right)^2-1\right)\sqrt{b\tan\left(dx+c\right)^2}}{4\,b^3d\tan\left(dx+c\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/4*(2*log(tan(d*x + c)^2/(tan(d*x + c)^2 + 1))*tan(d*x + c)^4 + 3*tan(d*x
+ c)^4 + 2*tan(d*x + c)^2 - 1)*sqrt(b*tan(d*x + c)^2)/(b^3*d*tan(d*x + c)^5
)
```

giac [B] time = 5.27, size = 271, normalized size = 2.79

$$-\frac{\operatorname{sgn}\left(-\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}+1\right)\operatorname{sgn}\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right)\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{4}-12\operatorname{sgn}\left(-\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}+1\right)\operatorname{sgn}\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/64*(sgn(-tan(1/2*d*x + 1/2*c)^2 + 1)*sgn(tan(1/2*d*x + 1/2*c))*tan(1/2*d
*x + 1/2*c)^4 - 12*sgn(-tan(1/2*d*x + 1/2*c)^2 + 1)*sgn(tan(1/2*d*x + 1/2*c
))*tan(1/2*d*x + 1/2*c)^2 + 64*log(tan(1/2*d*x + 1/2*c)^2 + 1)*sgn(-tan(1/2
*d*x + 1/2*c)^2 + 1)/sgn(tan(1/2*d*x + 1/2*c)) - 32*log(tan(1/2*d*x + 1/2*c
)^2)*sgn(-tan(1/2*d*x + 1/2*c)^2 + 1)/sgn(tan(1/2*d*x + 1/2*c)) + (48*sgn(-
tan(1/2*d*x + 1/2*c)^2 + 1)*tan(1/2*d*x + 1/2*c)^4 - 12*sgn(-tan(1/2*d*x +
1/2*c)^2 + 1)*tan(1/2*d*x + 1/2*c)^2 + sgn(-tan(1/2*d*x + 1/2*c)^2 + 1))/(s
gn(tan(1/2*d*x + 1/2*c))*tan(1/2*d*x + 1/2*c)^4))/(b^(5/2)*d)
```

maple [A] time = 0.15, size = 74, normalized size = 0.76

$$\frac{\tan\left(dx+c\right)\left(4\ln\left(\tan\left(dx+c\right)\right)\left(\tan^{4}\left(dx+c\right)\right)-2\ln\left(1+\tan^{2}\left(dx+c\right)\right)\left(\tan^{4}\left(dx+c\right)\right)+2\left(\tan^{2}\left(dx+c\right)\right)-1\right.}{4d\left(b\left(\tan^{2}\left(dx+c\right)\right)\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^2)^(5/2),x)
```

```
[Out] 1/4/d*tan(d*x+c)*(4*ln(tan(d*x+c))*tan(d*x+c)^4-2*ln(1+tan(d*x+c)^2)*tan(d*
x+c)^4+2*tan(d*x+c)^2-1)/(b*tan(d*x+c)^2)^(5/2)
```

maxima [A] time = 0.59, size = 66, normalized size = 0.68

$$-\frac{\frac{2\,\log\left(\tan\left(dx+c\right)^{2}+1\right)}{b^{\frac{5}{2}}}-\frac{4\,\log\left(\tan\left(dx+c\right)\right)}{b^{\frac{5}{2}}}-\frac{2\,\sqrt{b}\,\tan\left(dx+c\right)^{2}-\sqrt{b}}{b^{3}\tan\left(dx+c\right)^{4}}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*log(tan(d*x + c)^2 + 1)/b^(5/2) - 4*log(tan(d*x + c))/b^(5/2) - (2*
sqrt(b)*tan(d*x + c)^2 - sqrt(b))/(b^3*tan(d*x + c)^4))/d
```

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

$$\int \frac{1}{{\left(b\,{\mathrm{tan}\left(c+d\,x\right)}^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^2)^(5/2),x)
[Out] int(1/(b*tan(c + d*x)^2)^(5/2), x)
```

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

$$\int \frac{1}{\left(b\tan^{2}{\left(c+dx\right)}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**2)**(5/2),x)
[Out] Integral((b*tan(c + d*x)**2)**(-5/2), x)
```

3.30 $\int \left(b\tan^3(c+dx)\right)^{5/2} dx$

Optimal. Leaf size=364

$$-\frac{2b^2\tan^3(c+dx)\sqrt{b\tan^3(c+dx)}}{9d}+\frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d}+\frac{2b^2\tan^5(c+dx)\sqrt{b\tan^3(c+dx)}}{13d}-\frac{b^2\tan}{}$$

```
[Out] -2*b^2*cot(d*x+c)*(b*tan(d*x+c)^3)^(1/2)/d+1/2*b^2*arctan(-1+2^(1/2)*tan(d*
x+c)^(1/2))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)+1/2*b^2*arcta
n(1+2^(1/2)*tan(d*x+c)^(1/2))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(
3/2)-1/4*b^2*ln(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*(b*tan(d*x+c)^3)^(1/
2)/d*2^(1/2)/tan(d*x+c)^(3/2)+1/4*b^2*ln(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x
+c))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)+2/5*b^2*(b*tan(d*x+c
)^3)^(1/2)*tan(d*x+c)/d-2/9*b^2*(b*tan(d*x+c)^3)^(1/2)*tan(d*x+c)^3/d+2/13*
b^2*(b*tan(d*x+c)^3)^(1/2)*tan(d*x+c)^5/d
```

Rubi [A] time = 0.15, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.714$, Rules used = {3658, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{2b^2\tan^5(c+dx)\sqrt{b\tan^3(c+dx)}}{13d}-\frac{2b^2\tan^3(c+dx)\sqrt{b\tan^3(c+dx)}}{9d}+\frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d}-\frac{b^2\tan^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^3)^(5/2),x]
```

```
[Out] (-2*b^2*Cot[c + d*x]*Sqrt[b*Tan[c + d*x]^3])/d - (b^2*ArcTan[1 - Sqrt[2]*Sq
rt[Tan[c + d*x]]]*Sqrt[b*Tan[c + d*x]^3])/(Sqrt[2]*d*Tan[c + d*x]^(3/2)) +
(b^2*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]*Sqrt[b*Tan[c + d*x]^3])/(Sqrt[2
]*d*Tan[c + d*x]^(3/2)) - (b^2*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c +
 d*x]]*Sqrt[b*Tan[c + d*x]^3])/(2*Sqrt[2]*d*Tan[c + d*x]^(3/2)) + (b^2*Log[
1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]*Sqrt[b*Tan[c + d*x]^3])/(2*S
qrt[2]*d*Tan[c + d*x]^(3/2)) + (2*b^2*Tan[c + d*x]*Sqrt[b*Tan[c + d*x]^3])/
(5*d) - (2*b^2*Tan[c + d*x]^3*Sqrt[b*Tan[c + d*x]^3])/(9*d) + (2*b^2*Tan[c
+ d*x]^5*Sqrt[b*Tan[c + d*x]^3])/(13*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
```

```
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^3(c+dx)\right)^{5/2} dx = \frac{\left(b^2\sqrt{b\tan^3(c+dx)}\right)\int \tan^{\frac{15}{2}}(c+dx)\,dx}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2b^2\tan^5(c+dx)\sqrt{b\tan^3(c+dx)}}{13d} - \frac{\left(b^2\sqrt{b\tan^3(c+dx)}\right)\int \tan^{\frac{11}{2}}(c+dx)\,dx}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2b^2\tan^3(c+dx)\sqrt{b\tan^3(c+dx)}}{9d} + \frac{2b^2\tan^5(c+dx)\sqrt{b\tan^3(c+dx)}}{13d} + \frac{\left(b^2\sqrt{b\tan^3\right.}{}$$

$$= \frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d} - \frac{2b^2\tan^3(c+dx)\sqrt{b\tan^3(c+dx)}}{9d} + \frac{2b^2\tan^5(c+d}{}$$

$$= -\frac{2b^2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} + \frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d} - \frac{2b^2\tan^3(c+d}{}$$

$$= -\frac{2b^2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} + \frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d} - \frac{2b^2\tan^3(c+d}{}$$

$$= -\frac{2b^2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} + \frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d} - \frac{2b^2\tan^3(c+d}{}$$

$$= -\frac{2b^2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} + \frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d} - \frac{2b^2\tan^3(c+d}{}$$

$$= -\frac{2b^2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} + \frac{2b^2\tan(c+dx)\sqrt{b\tan^3(c+dx)}}{5d} - \frac{2b^2\tan^3(c+d}{}$$

$$= -\frac{2b^2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} - \frac{b^2\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)\sqrt{b\,t}}{2\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2b^2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} - \frac{b^2\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)}$$

Mathematica [A] time = 0.84, size = 199, normalized size = 0.55

$$\frac{b\left(b\tan^3(c+dx)\right)^{3/2}\left(-1170\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)+1170\sqrt{2}\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)+360\tan\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^3)^(5/2),x]
```

```
[Out] (b*(b*Tan[c + d*x]^3)^(3/2)*(-1170*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c +
d*x]]] + 1170*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]] - 585*Sqrt[2]*
Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] + 585*Sqrt[2]*Log[1 + Sq
rt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] - 4680*Sqrt[Tan[c + d*x]] + 936*Ta
n[c + d*x]^(5/2) - 520*Tan[c + d*x]^(9/2) + 360*Tan[c + d*x]^(13/2)))/(2340
*d*Tan[c + d*x]^(9/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(5/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

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

$$\int \left(b\tan\left(dx+c\right)^3\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c)^3)^(5/2), x)
```

maple [A] time = 0.12, size = 266, normalized size = 0.73

$$\frac{\left(b\left(\tan^3\left(dx+c\right)\right)\right)^{\frac{5}{2}}\left(360\left(b\tan\left(dx+c\right)\right)^{\frac{13}{2}}-520b^2\left(b\tan\left(dx+c\right)\right)^{\frac{9}{2}}+936\left(b\tan\left(dx+c\right)\right)^{\frac{5}{2}}b^4+585b^6\left(b^2\right)^{\frac{1}{4}}\sqrt{\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^3)^(5/2),x)
```

```
[Out] 1/2340/d*(b*tan(d*x+c)^3)^(5/2)*(360*(b*tan(d*x+c))^(13/2)-520*b^2*(b*tan(d
*x+c))^(9/2)+936*(b*tan(d*x+c))^(5/2)*b^4+585*b^6*(b^2)^(1/4)*2^(1/2)*ln(-(
b*tan(d*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2))/((b^2)^(
1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)-b*tan(d*x+c)-(b^2)^(1/2)))+1170*b^6*(b^2)
^(1/4)*2^(1/2)*arctan((2^(1/2)*(b*tan(d*x+c))^(1/2)+(b^2)^(1/4))/(b^2)^(1/4
))+1170*b^6*(b^2)^(1/4)*2^(1/2)*arctan((2^(1/2)*(b*tan(d*x+c))^(1/2)-(b^2)^
(1/4))/(b^2)^(1/4))-4680*(b*tan(d*x+c))^(1/2)*b^6)/tan(d*x+c)^5/(b*tan(d*x+
c))^(5/2)/b^4
```

maxima [A] time = 0.97, size = 178, normalized size = 0.49

$$\frac{360\, b^{\frac{5}{2}} \tan\left(dx+c\right)^{\frac{13}{2}} - 520\, b^{\frac{5}{2}} \tan\left(dx+c\right)^{\frac{9}{2}} + 936\, b^{\frac{5}{2}} \tan\left(dx+c\right)^{\frac{5}{2}} + 585\left(2\sqrt{2}\sqrt{b}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/2340*(360*b^(5/2)*tan(d*x + c)^(13/2) - 520*b^(5/2)*tan(d*x + c)^(9/2) +
936*b^(5/2)*tan(d*x + c)^(5/2) + 585*(2*sqrt(2)*sqrt(b)*arctan(1/2*sqrt(2)*
(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*sqrt(b)*arctan(-1/2*sqrt(2)*(
sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*sqrt(b)*log(sqrt(2)*sqrt(tan(d*x
 + c)) + tan(d*x + c) + 1) - sqrt(2)*sqrt(b)*log(-sqrt(2)*sqrt(tan(d*x + c)
) + tan(d*x + c) + 1))*b^2 - 4680*b^(5/2)*sqrt(tan(d*x + c)))/d
```

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

$$\int {\left(b\,\tan\left(c+d\,x\right)^3\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^3)^(5/2),x)
```

```
[Out] int((b*tan(c + d*x)^3)^(5/2), x)
```

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

$$\int \left(b \tan^{3}{\left(c + dx \right)}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**3)**(5/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**3)**(5/2), x)
```

3.31 $\int \left(b\tan^3(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=286

$$-\frac{2b\sqrt{b\tan^3(c+dx)}}{3d}+\frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d}-\frac{b\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)}+\frac{b\tan}{}$$

```
[Out] -2/3*b*(b*tan(d*x+c)^3)^(1/2)/d+1/2*b*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*(
b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)+1/2*b*arctan(1+2^(1/2)*tan
(d*x+c)^(1/2))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)+1/4*b*ln(1
-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(
d*x+c)^(3/2)-1/4*b*ln(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*(b*tan(d*x+c)^
3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)+2/7*b*(b*tan(d*x+c)^3)^(1/2)*tan(d*x+c)
^2/d
```

Rubi [A] time = 0.13, antiderivative size = 286, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.714, Rules used = {3658, 3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d}-\frac{2b\sqrt{b\tan^3(c+dx)}}{3d}-\frac{b\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)}+\frac{b\tan^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^3)^(3/2),x]
```

```
[Out] (-2*b*Sqrt[b*Tan[c + d*x]^3])/(3*d) - (b*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*
x]]]*Sqrt[b*Tan[c + d*x]^3])/(Sqrt[2]*d*Tan[c + d*x]^(3/2)) + (b*ArcTan[1 +
 Sqrt[2]*Sqrt[Tan[c + d*x]]]*Sqrt[b*Tan[c + d*x]^3])/(Sqrt[2]*d*Tan[c + d*x
]^(3/2)) + (b*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]*Sqrt[b*Tan
[c + d*x]^3])/(2*Sqrt[2]*d*Tan[c + d*x]^(3/2)) - (b*Log[1 + Sqrt[2]*Sqrt[Ta
n[c + d*x]] + Tan[c + d*x]]*Sqrt[b*Tan[c + d*x]^3])/(2*Sqrt[2]*d*Tan[c + d*
x]^(3/2)) + (2*b*Tan[c + d*x]^2*Sqrt[b*Tan[c + d*x]^3])/(7*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
```

```
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^3(c+dx)\right)^{3/2}dx = \frac{\left(b\sqrt{b\tan^3(c+dx)}\right)\int \tan^{\frac{9}{2}}(c+dx)\,dx}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d} - \frac{\left(b\sqrt{b\tan^3(c+dx)}\right)\int \tan^{\frac{5}{2}}(c+dx)\,dx}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2b\sqrt{b\tan^3(c+dx)}}{3d} + \frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d} + \frac{\left(b\sqrt{b\tan^3(c+dx)}\right)\int \sqrt{\mathrm{ta}}}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= -\frac{2b\sqrt{b\tan^3(c+dx)}}{3d} + \frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d} + \frac{\left(b\sqrt{b\tan^3(c+dx)}\right)\mathrm{Subst}}{d\tan^{\frac{3}{2}}(}$$

$$= -\frac{2b\sqrt{b\tan^3(c+dx)}}{3d} + \frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d} + \frac{\left(2b\sqrt{b\tan^3(c+dx)}\right)\mathrm{Subs}}{d\tan}$$

$$= -\frac{2b\sqrt{b\tan^3(c+dx)}}{3d} + \frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d} - \frac{\left(b\sqrt{b\tan^3(c+dx)}\right)\mathrm{Subst}}{d\tan^{\frac{3}{2}}}$$

$$= -\frac{2b\sqrt{b\tan^3(c+dx)}}{3d} + \frac{2b\tan^2(c+dx)\sqrt{b\tan^3(c+dx)}}{7d} + \frac{\left(b\sqrt{b\tan^3(c+dx)}\right)\mathrm{Subst}}{2d\,\mathrm{ta}}$$

$$= -\frac{2b\sqrt{b\tan^3(c+dx)}}{3d} + \frac{b\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)\sqrt{b\tan^3(c+dx)}}{2\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)} -$$

$$= -\frac{2b\sqrt{b\tan^3(c+dx)}}{3d} - \frac{b\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)} + \frac{b\tan^{-1}\left(1+\right.}{}$$

Mathematica [C] time = 0.06, size = 54, normalized size = 0.19

$$\frac{2b\sqrt{b\tan^3(c+dx)}\left(7\,{}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\tan^2(c+dx)\right)+3\tan^2(c+dx)-7\right)}{21d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^3)^(3/2),x]
```

```
[Out] (2*b*Sqrt[b*Tan[c + d*x]^3]*(-7 + 7*Hypergeometric2F1[3/4, 1, 7/4, -Tan[c +
 d*x]^2] + 3*Tan[c + d*x]^2))/(21*d)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(3/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

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

$$\int \left(b\tan\left(dx+c\right)^{3}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c)^3)^(3/2), x)
```

maple [A] time = 0.08, size = 236, normalized size = 0.83

$$\frac{\left(b\left(\tan^{3}\left(dx+c\right)\right)\right)^{\frac{3}{2}}\left(24\left(b\tan\left(dx+c\right)\right)^{\frac{7}{2}}\left(b^{2}\right)^{\frac{1}{4}}-56\left(b\tan\left(dx+c\right)\right)^{\frac{3}{2}}b^{2}\left(b^{2}\right)^{\frac{1}{4}}+21b^{4}\sqrt{2}\,\ln\left(-\frac{\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{}}{b\tan(dx+c)+\left(b^{2}\right)^{\frac{1}{4}}\sqrt{b}}\right.\right.}{84d\tan\left(dx+c\right)^{3}\left(b\tan\left(dx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^3)^(3/2),x)
```

```
[Out] 1/84/d*(b*tan(d*x+c)^3)^(3/2)*(24*(b*tan(d*x+c))^(7/2)*(b^2)^(1/4)-56*(b*ta
n(d*x+c))^(3/2)*b^2*(b^2)^(1/4)+21*b^4*2^(1/2)*ln(-((b^2)^(1/4)*(b*tan(d*x+
c))^(1/2)*2^(1/2)-b*tan(d*x+c)-(b^2)^(1/2))/(b*tan(d*x+c)+(b^2)^(1/4)*(b*ta
n(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2)))+42*b^4*2^(1/2)*arctan((2^(1/2)*(b*tan
(d*x+c))^(1/2)+(b^2)^(1/4))/(b^2)^(1/4))+42*b^4*2^(1/2)*arctan((2^(1/2)*(b*
tan(d*x+c))^(1/2)-(b^2)^(1/4))/(b^2)^(1/4)))/tan(d*x+c)^3/(b*tan(d*x+c))^(3
/2)/b^2/(b^2)^(1/4)
```

maxima [A] time = 0.63, size = 140, normalized size = 0.49

$$\frac{24\,b^{\frac{3}{2}}\tan\left(dx+c\right)^{\frac{7}{2}}-56\,b^{\frac{3}{2}}\tan\left(dx+c\right)^{\frac{3}{2}}+21\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan\left(dx+c\right)}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/84*(24*b^(3/2)*tan(d*x + c)^(7/2) - 56*b^(3/2)*tan(d*x + c)^(3/2) + 21*(2
*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*sqrt(2)*a
rctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*log(sqrt(2)*
sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)*sqrt(tan(d*x
+ c)) + tan(d*x + c) + 1))*b^(3/2))/d
```

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

$$\int \left(b\tan\left(c+d\,x\right)^3\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^3)^(3/2),x)
```

```
[Out] int((b*tan(c + d*x)^3)^(3/2), x)
```

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

$$\int \left(b\tan^{3}{\left(c + dx \right)}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**3)**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**3)**(3/2), x)
```

3.32 $\int \sqrt{b\tan^3(c+dx)}\,dx$

Optimal. Leaf size=255

$$\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}d\tan^{\frac{3}{2}}(c+dx)}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}d\tan^{\frac{3}{2}}(c+dx)}+\frac{\sqrt{b\tan^3(c+dx}}{}$$

```
[Out] 2*cot(d*x+c)*(b*tan(d*x+c)^3)^(1/2)/d-1/2*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2
))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)-1/2*arctan(1+2^(1/2)*t
an(d*x+c)^(1/2))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)+1/4*ln(1
-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*(b*tan(d*x+c)^3)^(1/2)/d*2^(1/2)/tan(
d*x+c)^(3/2)-1/4*ln(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*(b*tan(d*x+c)^3)
^(1/2)/d*2^(1/2)/tan(d*x+c)^(3/2)
```

Rubi [A] time = 0.11, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.714, Rules used = {3658, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}d\tan^{\frac{3}{2}}(c+dx)}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}d\tan^{\frac{3}{2}}(c+dx)}+\frac{\sqrt{b\tan^3(c+dx}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[c + d*x]^3],x]
```

```
[Out] (2*Cot[c + d*x]*Sqrt[b*Tan[c + d*x]^3])/d + (ArcTan[1 - Sqrt[2]*Sqrt[Tan[c
+ d*x]]]*Sqrt[b*Tan[c + d*x]^3])/(Sqrt[2]*d*Tan[c + d*x]^(3/2)) - (ArcTan[1
 + Sqrt[2]*Sqrt[Tan[c + d*x]]]*Sqrt[b*Tan[c + d*x]^3])/(Sqrt[2]*d*Tan[c + d
*x]^(3/2)) + (Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]*Sqrt[b*Tan
[c + d*x]^3])/(2*Sqrt[2]*d*Tan[c + d*x]^(3/2)) - (Log[1 + Sqrt[2]*Sqrt[Tan[
c + d*x]] + Tan[c + d*x]]*Sqrt[b*Tan[c + d*x]^3])/(2*Sqrt[2]*d*Tan[c + d*x]
^(3/2))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
```

```
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \sqrt{b\tan^3(c+dx)}\,dx = \frac{\sqrt{b\tan^3(c+dx)}\int \tan^{\frac{3}{2}}(c+dx)\,dx}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} - \frac{\sqrt{b\tan^3(c+dx)}\int \frac{1}{\sqrt{\tan(c+dx)}}\,dx}{\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} - \frac{\sqrt{b\tan^3(c+dx)}\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \tan(c+dx)\right)}{d\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} - \frac{\left(2\sqrt{b\tan^3(c+dx)}\right)\text{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right.}{d\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} - \frac{\sqrt{b\tan^3(c+dx)}\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d\tan^{\frac{3}{2}}(c+dx)} -$$

$$= \frac{2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} - \frac{\sqrt{b\tan^3(c+dx)}\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right.}{2d\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} + \frac{\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)\sqrt{b\tan^3(c+}}{2\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)}$$

$$= \frac{2\cot(c+dx)\sqrt{b\tan^3(c+dx)}}{d} + \frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\sqrt{b\tan^3(c+dx)}}{\sqrt{2}\,d\tan^{\frac{3}{2}}(c+dx)} - \tan^{-1}$$

Mathematica [A] time = 0.25, size = 161, normalized size = 0.63

$$\frac{\sqrt{b\tan^3(c+dx)}\left(2\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)-2\sqrt{2}\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)+8\sqrt{\tan(c+dx)}+\sqrt{2}\right.}{4d\tan^{\frac{3}{2}}(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[c + d*x]^3],x]

[Out] ((2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]] - 2*Sqrt[2]*ArcTan[1 + S
qrt[2]*Sqrt[Tan[c + d*x]]] + Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + T
an[c + d*x]] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]] +
 8*Sqrt[Tan[c + d*x]])*Sqrt[b*Tan[c + d*x]^3])/(4*d*Tan[c + d*x]^(3/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(1/2),x, algorithm="fricas")
[Out] Timed out
```

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

$$\int \sqrt{b \tan (dx + c)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*tan(d*x + c)^3), x)
```

maple [A] time = 0.10, size = 208, normalized size = 0.82

$$-\frac{\sqrt{b\left(\tan^3(dx+c)\right)}\left(\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\,\ln\left(-\frac{b\tan(dx+c)+\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}{\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}-b\tan(dx+c)-\sqrt{b^2}}\right)+2\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{b\tan(dx+c)}+\left(\right.}{\left(b^2\right)^{\frac{1}{4}}}\right.}{4d\tan(dx+c)\sqrt{b\tan(dx+c)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^3)^(1/2),x)
[Out] -1/4/d*(b*tan(d*x+c)^3)^(1/2)*((b^2)^(1/4)*2^(1/2)*ln(-(b*tan(d*x+c)+(b^2)^
(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2))/((b^2)^(1/4)*(b*tan(d*x+c))
^(1/2)*2^(1/2)-b*tan(d*x+c)-(b^2)^(1/2)))+2*(b^2)^(1/4)*2^(1/2)*arctan((2^(
1/2)*(b*tan(d*x+c))^(1/2)+(b^2)^(1/4))/(b^2)^(1/4))+2*(b^2)^(1/4)*2^(1/2)*a
rctan((2^(1/2)*(b*tan(d*x+c))^(1/2)-(b^2)^(1/4))/(b^2)^(1/4))-8*(b*tan(d*x+
c))^(1/2))/tan(d*x+c)/(b*tan(d*x+c))^(1/2)
```

maxima [A] time = 0.66, size = 133, normalized size = 0.52

$$-\frac{2\sqrt{2}\sqrt{b}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}\sqrt{b}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)+\sqrt{2}\sqrt{b}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*sqrt(b)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))
) + 2*sqrt(2)*sqrt(b)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c))))
 + sqrt(2)*sqrt(b)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqr
t(2)*sqrt(b)*log(-sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - 8*sqrt(b
)*sqrt(tan(d*x + c)))/d
```

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

$$\int \sqrt{b\tan\left(c+d\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^3)^(1/2),x)
```

```
[Out] int((b*tan(c + d*x)^3)^(1/2), x)
```

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

$$\int \sqrt{b\tan^{3}\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**3)**(1/2),x)
```

```
[Out] Integral(sqrt(b*tan(c + d*x)**3), x)
```

3.33 $\int \frac{1}{\sqrt{b\tan^3(c+dx)}}\,dx$

Optimal. Leaf size=255

$$-\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}}+\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,d\sqrt{b\tan^3(c+dx)}}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,d\sqrt{b\tan^3(c+dx)}}-\cdots$$

```
[Out] -2*tan(d*x+c)/d/(b*tan(d*x+c)^3)^(1/2)-1/2*arctan(-1+2^(1/2)*tan(d*x+c)^(1/
2))*tan(d*x+c)^(3/2)/d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)-1/2*arctan(1+2^(1/2)*
tan(d*x+c)^(1/2))*tan(d*x+c)^(3/2)/d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)-1/4*ln(
1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*tan(d*x+c)^(3/2)/d*2^(1/2)/(b*tan(d*
x+c)^3)^(1/2)+1/4*ln(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*tan(d*x+c)^(3/2
)/d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.714, Rules used = {3658, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,d\sqrt{b\tan^3(c+dx)}}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,d\sqrt{b\tan^3(c+dx)}}-\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[b*Tan[c + d*x]^3],x]
```

```
[Out] (-2*Tan[c + d*x])/(d*Sqrt[b*Tan[c + d*x]^3]) + (ArcTan[1 - Sqrt[2]*Sqrt[Tan
[c + d*x]]]*Tan[c + d*x]^(3/2))/(Sqrt[2]*d*Sqrt[b*Tan[c + d*x]^3]) - (ArcTa
n[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]*Tan[c + d*x]^(3/2))/(Sqrt[2]*d*Sqrt[b*Tan
[c + d*x]^3]) - (Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]*Tan[c +
 d*x]^(3/2))/(2*Sqrt[2]*d*Sqrt[b*Tan[c + d*x]^3]) + (Log[1 + Sqrt[2]*Sqrt[T
an[c + d*x]] + Tan[c + d*x]]*Tan[c + d*x]^(3/2))/(2*Sqrt[2]*d*Sqrt[b*Tan[c
+ d*x]^3])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
```

```
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \frac{1}{\sqrt{b\tan^3(c+dx)}}\,dx = \frac{\tan^{\frac{3}{2}}(c+dx)\int \frac{1}{\tan^{\frac{3}{2}}(c+dx)}\,dx}{\sqrt{b\tan^3(c+dx)}}$$

$$= -\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+dx)\int \sqrt{\tan(c+dx)}\,dx}{\sqrt{b\tan^3(c+dx)}}$$

$$= -\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+dx)\,\text{Subst}\left(\int \frac{\sqrt{x}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d\sqrt{b\tan^3(c+dx)}}$$

$$= -\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}} - \frac{\left(2\tan^{\frac{3}{2}}(c+dx)\right)\text{Subst}\left(\int \frac{x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d\sqrt{b\tan^3(c+dx)}}$$

$$= -\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}} + \frac{\tan^{\frac{3}{2}}(c+dx)\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan(c+dx)}\right)}{d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+dx)}{}$$

$$= -\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+dx)\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \sqrt{\tan(c+dx)}\right)}{2d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+}{}$$

$$= -\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}} - \frac{\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+dx)\right)\tan^{\frac{3}{2}}(c+dx)}{2\sqrt{2}d\sqrt{b\tan^3(c+dx)}} + \frac{\log\left(1\right.}{}$$

$$= -\frac{2\tan(c+dx)}{d\sqrt{b\tan^3(c+dx)}} + \frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{-1}\left(1+\sqrt{2}\sqrt{\tan\right.}{\sqrt{2}d\sqrt{b}}$$

Mathematica [C] time = 0.03, size = 43, normalized size = 0.17

$$-\frac{2\tan(c+dx)\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\tan^2(c+dx)\right)}{d\sqrt{b\tan^3(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[b*Tan[c + d*x]^3],x]
```

```
[Out] (-2*Hypergeometric2F1[-1/4, 1, 3/4, -Tan[c + d*x]^2]*Tan[c + d*x])/(d*Sqrt[
b*Tan[c + d*x]^3])
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(1/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.12, size = 211, normalized size = 0.83

$$-\frac{\tan(dx+c)\left(\sqrt{2}\,\sqrt{b\tan(dx+c)}\,\ln\left(-\frac{(b^2)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}-b\tan(dx+c)-\sqrt{b^2}}{b\tan(dx+c)+(b^2)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}\right)+2\sqrt{2}\,\sqrt{b\tan(dx+c)}\,\arctan\left(\frac{\sqrt{2}}{}\right.}{4d\sqrt{b\left(\tan^3(dx+c)\right)}\,\left(b^2\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^3)^(1/2),x)
```

```
[Out] -1/4/d*tan(d*x+c)*(2^(1/2)*(b*tan(d*x+c))^(1/2)*ln(-((b^2)^(1/4)*(b*tan(d*x
+c))^(1/2)*2^(1/2)-b*tan(d*x+c)-(b^2)^(1/2))/(b*tan(d*x+c)+(b^2)^(1/4)*(b*t
an(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2)))+2*2^(1/2)*(b*tan(d*x+c))^(1/2)*arcta
n((2^(1/2)*(b*tan(d*x+c))^(1/2)+(b^2)^(1/4))/(b^2)^(1/4))+2*2^(1/2)*(b*tan(
d*x+c))^(1/2)*arctan((2^(1/2)*(b*tan(d*x+c))^(1/2)-(b^2)^(1/4))/(b^2)^(1/4)
)+8*(b^2)^(1/4))/(b*tan(d*x+c)^3)^(1/2)/(b^2)^(1/4)
```

maxima [A] time = 0.54, size = 126, normalized size = 0.49

$$-\frac{\frac{2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)-\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan(dx+c)}+\tan(dx+c)+1\right)+\sqrt{2}\log\left(-\sqrt{2}\sqrt{\tan}\right.}{\sqrt{b}}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/4*((2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) + 2*s
qrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2)*log(
```

```
sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)*sqrt(
tan(d*x + c)) + tan(d*x + c) + 1))/sqrt(b) + 8/(sqrt(b)*sqrt(tan(d*x + c)))
)/d
```

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

$$\int \frac{1}{\sqrt{b\tan\left(c+d\,x\right)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^3)^(1/2),x)
```

```
[Out] int(1/(b*tan(c + d*x)^3)^(1/2), x)
```

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

$$\int \frac{1}{\sqrt{b\tan^{3}\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**3)**(1/2),x)
```

```
[Out] Integral(1/sqrt(b*tan(c + d*x)**3), x)
```

3.34 $\int \frac{1}{\left(b\tan^3(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=298

$$\frac{2}{3bd\sqrt{b\tan^3(c+dx)}}-\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,bd\sqrt{b\tan^3(c+dx)}}+\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,bd\sqrt{b\tan^3(c+dx)}}-$$

```
[Out] 2/3/b/d/(b*tan(d*x+c)^3)^(1/2)-2/7*cot(d*x+c)^2/b/d/(b*tan(d*x+c)^3)^(1/2)+
1/2*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*tan(d*x+c)^(3/2)/b/d*2^(1/2)/(b*tan
(d*x+c)^3)^(1/2)+1/2*arctan(1+2^(1/2)*tan(d*x+c)^(1/2))*tan(d*x+c)^(3/2)/b/
d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)-1/4*ln(1-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+
c))*tan(d*x+c)^(3/2)/b/d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)+1/4*ln(1+2^(1/2)*ta
n(d*x+c)^(1/2)+tan(d*x+c))*tan(d*x+c)^(3/2)/b/d*2^(1/2)/(b*tan(d*x+c)^3)^(1
/2)
```

Rubi [A] time = 0.13, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.714, Rules used = {3658, 3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,bd\sqrt{b\tan^3(c+dx)}}+\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,bd\sqrt{b\tan^3(c+dx)}}+\frac{2}{3bd\sqrt{b\tan^3(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^3)^(-3/2),x]
```

```
[Out] 2/(3*b*d*Sqrt[b*Tan[c + d*x]^3]) - (2*Cot[c + d*x]^2)/(7*b*d*Sqrt[b*Tan[c +
 d*x]^3]) - (ArcTan[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]]*Tan[c + d*x]^(3/2))/(Sq
rt[2]*b*d*Sqrt[b*Tan[c + d*x]^3]) + (ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]
*Tan[c + d*x]^(3/2))/(Sqrt[2]*b*d*Sqrt[b*Tan[c + d*x]^3]) - (Log[1 - Sqrt[2
]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]*Tan[c + d*x]^(3/2))/(2*Sqrt[2]*b*d*Sqr
t[b*Tan[c + d*x]^3]) + (Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]*
Tan[c + d*x]^(3/2))/(2*Sqrt[2]*b*d*Sqrt[b*Tan[c + d*x]^3])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
```

```
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \frac{1}{\left(b\tan^3(c+dx)\right)^{3/2}}\,dx = \frac{\tan^{\frac{3}{2}}(c+dx)\int \frac{1}{\tan^{\frac{9}{2}}(c+dx)}\,dx}{b\sqrt{b\tan^3(c+dx)}}$$

$$= -\frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+dx)\int \frac{1}{\tan^{\frac{5}{2}}(c+dx)}\,dx}{b\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2}{3bd\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} + \frac{\tan^{\frac{3}{2}}(c+dx)\int \frac{1}{\sqrt{\tan(c+dx)}}\,dx}{b\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2}{3bd\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} + \frac{\tan^{\frac{3}{2}}(c+dx)\,\text{Subst}\left(\int \frac{1}{\sqrt{x}(1+x^2)}\,dx, x, \text{t}\right.}{bd\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2}{3bd\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} + \frac{\left(2\tan^{\frac{3}{2}}(c+dx)\right)\text{Subst}\left(\int \frac{1}{1+x^4}\,dx, x, \right.}{bd\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2}{3bd\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} + \frac{\tan^{\frac{3}{2}}(c+dx)\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4}\,dx, x, \sqrt{\tan}\right.}{bd\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2}{3bd\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} + \frac{\tan^{\frac{3}{2}}(c+dx)\,\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, \right.}{2bd\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2}{3bd\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} - \frac{\log\left(1-\sqrt{2}\sqrt{\tan(c+dx)}+\tan(c+d\right.}{2\sqrt{2}\,bd\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2}{3bd\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^2(c+dx)}{7bd\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+}{\sqrt{2}\,bd\sqrt{b\tan^3(c+dx)}}$$

Mathematica [C] time = 0.07, size = 45, normalized size = 0.15

$$-\frac{2\tan(c+dx)\,{}_2F_1\left(-\frac{7}{4},1;-\frac{3}{4};-\tan^2(c+dx)\right)}{7d\left(b\tan^3(c+dx)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^3)^(-3/2),x]
```

```
[Out] (-2*Hypergeometric2F1[-7/4, 1, -3/4, -Tan[c + d*x]^2]*Tan[c + d*x])/(7*d*(b
*Tan[c + d*x]^3)^(3/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(3/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.10, size = 236, normalized size = 0.79

$$\frac{\tan(dx+c)\left(21\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\,\left(b\tan(dx+c)\right)^{\frac{7}{2}}\ln\left(-\frac{b\tan(dx+c)+\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}+\sqrt{b^2}}{\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\,\sqrt{2}-b\tan(dx+c)-\sqrt{b^2}}\right)+42\left(b^2\right)^{\frac{1}{4}}\sqrt{2}\,\left(b\tan(dx+\right.\right.}{84d\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^3)^(3/2),x)
```

```
[Out] 1/84/d*tan(d*x+c)/b^4*(21*(b^2)^(1/4)*2^(1/2)*(b*tan(d*x+c))^(7/2)*ln(-(b*t
an(d*x+c)+(b^2)^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2))/((b^2)^(1/4
)*(b*tan(d*x+c))^(1/2)*2^(1/2)-b*tan(d*x+c)-(b^2)^(1/2)))+42*(b^2)^(1/4)*2^
(1/2)*(b*tan(d*x+c))^(7/2)*arctan((2^(1/2)*(b*tan(d*x+c))^(1/2)+(b^2)^(1/4)
)/(b^2)^(1/4))+42*(b^2)^(1/4)*2^(1/2)*(b*tan(d*x+c))^(7/2)*arctan((2^(1/2)*
(b*tan(d*x+c))^(1/2)-(b^2)^(1/4))/(b^2)^(1/4))+56*b^4*tan(d*x+c)^2-24*b^4)/
(b*tan(d*x+c)^3)^(3/2)
```

maxima [A] time = 0.63, size = 163, normalized size = 0.55

$$\frac{\frac{21\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)+\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan(dx+c)}+\tan(dx+c)+1\right)-\sqrt{2}\log\left(-\sqrt{2}\right.\right.}{b^{\frac{3}{2}}}}{84\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/84*(21*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c)))) +
2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) + sqrt(2)*l
og(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) - sqrt(2)*log(-sqrt(2)*sq
rt(tan(d*x + c)) + tan(d*x + c) + 1))/b^(3/2) + 8*(21*sqrt(tan(d*x + c)) +
7/tan(d*x + c)^(3/2) - 3/tan(d*x + c)^(7/2))/b^(3/2) - 168*sqrt(tan(d*x + c
))/b^(3/2))/d
```

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

$$\int \frac{1}{\left(b\tan\left(c+d\,x\right)^3\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^3)^(3/2),x)
```

```
[Out] int(1/(b*tan(c + d*x)^3)^(3/2), x)
```

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

$$\int \frac{1}{\left(b\tan^3\left(c+dx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**3)**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**3)**(-3/2), x)
```

3.35 $\int \frac{1}{\left(b\tan^3(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=364

$$\frac{2\tan(c+dx)}{b^2d\sqrt{b\tan^3(c+dx)}}-\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,b^2d\sqrt{b\tan^3(c+dx)}}+\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,b^2d\sqrt{b\tan^3(c+dx)}}+$$

```
[Out] -2/5*cot(d*x+c)/b^2/d/(b*tan(d*x+c)^3)^(1/2)+2/9*cot(d*x+c)^3/b^2/d/(b*tan(
d*x+c)^3)^(1/2)-2/13*cot(d*x+c)^5/b^2/d/(b*tan(d*x+c)^3)^(1/2)+2*tan(d*x+c)
/b^2/d/(b*tan(d*x+c)^3)^(1/2)+1/2*arctan(-1+2^(1/2)*tan(d*x+c)^(1/2))*tan(d
*x+c)^(3/2)/b^2/d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)+1/2*arctan(1+2^(1/2)*tan(d
*x+c)^(1/2))*tan(d*x+c)^(3/2)/b^2/d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)+1/4*ln(1
-2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*tan(d*x+c)^(3/2)/b^2/d*2^(1/2)/(b*tan
(d*x+c)^3)^(1/2)-1/4*ln(1+2^(1/2)*tan(d*x+c)^(1/2)+tan(d*x+c))*tan(d*x+c)^(
3/2)/b^2/d*2^(1/2)/(b*tan(d*x+c)^3)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.714, Rules used = {3658, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(c+dx)}\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,b^2d\sqrt{b\tan^3(c+dx)}}+\frac{\tan^{-1}\left(\sqrt{2}\sqrt{\tan(c+dx)}+1\right)\tan^{\frac{3}{2}}(c+dx)}{\sqrt{2}\,b^2d\sqrt{b\tan^3(c+dx)}}+\frac{2\tan(c+dx)}{b^2d\sqrt{b\tan^3(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^3)^(-5/2),x]
```

```
[Out] (-2*Cot[c + d*x])/(5*b^2*d*Sqrt[b*Tan[c + d*x]^3]) + (2*Cot[c + d*x]^3)/(9*
b^2*d*Sqrt[b*Tan[c + d*x]^3]) - (2*Cot[c + d*x]^5)/(13*b^2*d*Sqrt[b*Tan[c +
 d*x]^3]) + (2*Tan[c + d*x])/(b^2*d*Sqrt[b*Tan[c + d*x]^3]) - (ArcTan[1 - S
qrt[2]*Sqrt[Tan[c + d*x]]]*Tan[c + d*x]^(3/2))/(Sqrt[2]*b^2*d*Sqrt[b*Tan[c
+ d*x]^3]) + (ArcTan[1 + Sqrt[2]*Sqrt[Tan[c + d*x]]]*Tan[c + d*x]^(3/2))/(S
qrt[2]*b^2*d*Sqrt[b*Tan[c + d*x]^3]) + (Log[1 - Sqrt[2]*Sqrt[Tan[c + d*x]]
+ Tan[c + d*x]]*Tan[c + d*x]^(3/2))/(2*Sqrt[2]*b^2*d*Sqrt[b*Tan[c + d*x]^3]
) - (Log[1 + Sqrt[2]*Sqrt[Tan[c + d*x]] + Tan[c + d*x]]*Tan[c + d*x]^(3/2))
/(2*Sqrt[2]*b^2*d*Sqrt[b*Tan[c + d*x]^3])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
```

```
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \frac{1}{\left(b\tan^3(c+dx)\right)^{5/2}}\,dx = \frac{\tan^{\frac{3}{2}}(c+dx)\int \frac{1}{\tan^{\frac{15}{2}}(c+dx)}\,dx}{b^2\sqrt{b\tan^3(c+dx)}}$$

$$= -\frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+dx)\int \frac{1}{\tan^{\frac{11}{2}}(c+dx)}\,dx}{b^2\sqrt{b\tan^3(c+dx)}}$$

$$= \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{\tan^{\frac{3}{2}}(c+dx)\int \frac{1}{\tan^{\frac{7}{2}}(c+dx)}\,dx}{b^2\sqrt{b\tan^3(c+dx)}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} - \frac{\tan^{\frac{3}{2}}(c+}{b^2\sqrt{b}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\tan(}{b^2d\sqrt{b\tan}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\tan(}{b^2d\sqrt{b\tan}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\tan(}{b^2d\sqrt{b\tan}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\tan(}{b^2d\sqrt{b\tan}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\tan(}{b^2d\sqrt{b\tan}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\tan(}{b^2d\sqrt{b\tan}}$$

$$= -\frac{2\cot(c+dx)}{5b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\cot^3(c+dx)}{9b^2d\sqrt{b\tan^3(c+dx)}} - \frac{2\cot^5(c+dx)}{13b^2d\sqrt{b\tan^3(c+dx)}} + \frac{2\tan(}{b^2d\sqrt{b\tan}}$$

Mathematica [C] time = 0.06, size = 45, normalized size = 0.12

$$-\frac{2\tan(c+dx)\,{}_2F_1\left(-\frac{13}{4},1;-\frac{9}{4};-\tan^2(c+dx)\right)}{13d\left(b\tan^3(c+dx)\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^3)^(-5/2),x]
```

```
[Out] (-2*Hypergeometric2F1[-13/4, 1, -9/4, -Tan[c + d*x]^2]*Tan[c + d*x])/(13*d*
(b*Tan[c + d*x]^3)^(5/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(5/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.11, size = 272, normalized size = 0.75

$$\tan(dx+c)\left(585\sqrt{2}\ (b\tan(dx+c))^{\frac{13}{2}}\ln\left(-\frac{\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\ \sqrt{2}-b\tan(dx+c)-\sqrt{b^2}}{b\tan(dx+c)+\left(b^2\right)^{\frac{1}{4}}\sqrt{b\tan(dx+c)}\ \sqrt{2}+\sqrt{b^2}}\right)+1170\sqrt{2}\ (b\tan(dx+c))^{\frac{13}{2}}\ \text{arc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^3)^(5/2),x)
```

```
[Out] 1/2340/d*tan(d*x+c)/b^6*(585*2^(1/2)*(b*tan(d*x+c))^(13/2)*ln(-((b^2)^(1/4)
*(b*tan(d*x+c))^(1/2)*2^(1/2)-b*tan(d*x+c)-(b^2)^(1/2))/(b*tan(d*x+c)+(b^2)
```

```
^(1/4)*(b*tan(d*x+c))^(1/2)*2^(1/2)+(b^2)^(1/2)))+1170*2^(1/2)*(b*tan(d*x+c
))^(13/2)*arctan((2^(1/2)*(b*tan(d*x+c))^(1/2)+(b^2)^(1/4))/(b^2)^(1/4))+11
70*2^(1/2)*(b*tan(d*x+c))^(13/2)*arctan((2^(1/2)*(b*tan(d*x+c))^(1/2)-(b^2)
^(1/4))/(b^2)^(1/4))+4680*(b^2)^(1/4)*tan(d*x+c)^6*b^6-936*b^6*(b^2)^(1/4)*
tan(d*x+c)^4+520*b^6*(b^2)^(1/4)*tan(d*x+c)^2-360*b^6*(b^2)^(1/4))/(b*tan(d
*x+c)^3)^(5/2)/(b^2)^(1/4)
```

maxima [A] time = 0.81, size = 172, normalized size = 0.47

$$\frac{\frac{585\left(2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2\sqrt{\tan(dx+c)}\right)\right)+2\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2\sqrt{\tan(dx+c)}\right)\right)-\sqrt{2}\log\left(\sqrt{2}\sqrt{\tan(dx+c)}+\tan(dx+c)+1\right)+\sqrt{2}\log\left(-\sqrt{2}\sqrt{\cdots}\right.\right.}{b^{\frac{5}{2}}}}{2340\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^3)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/2340*(585*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*sqrt(tan(d*x + c))))
 + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2) - 2*sqrt(tan(d*x + c)))) - sqrt(2
)*log(sqrt(2)*sqrt(tan(d*x + c)) + tan(d*x + c) + 1) + sqrt(2)*log(-sqrt(2)
*sqrt(tan(d*x + c)) + tan(d*x + c) + 1))/b^(5/2) + 8*(585*sqrt(b)/sqrt(tan(
d*x + c)) - 117*sqrt(b)/tan(d*x + c)^(5/2) + 65*sqrt(b)/tan(d*x + c)^(9/2)
- 45*sqrt(b)/tan(d*x + c)^(13/2))/b^3)/d
```

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

$$\int \frac{1}{{\left(b\,{\tan\left(c+d\,x\right)}^3\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^3)^(5/2),x)
```

```
[Out] int(1/(b*tan(c + d*x)^3)^(5/2), x)
```

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

$$\int \frac{1}{\left(b\tan^{3}{\left(c+dx\right)}\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**3)**(5/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**3)**(-5/2), x)
```

3.36 $\int \left(b\tan^4(c+dx)\right)^{5/2}\,dx$

Optimal. Leaf size=182

$$-\frac{b^2\tan(c+dx)\sqrt{b\tan^4(c+dx)}}{3d}+\frac{b^2\tan^7(c+dx)\sqrt{b\tan^4(c+dx)}}{9d}-\frac{b^2\tan^5(c+dx)\sqrt{b\tan^4(c+dx)}}{7d}+\frac{b^2\tan^3(c\cdots}{}$$

```
[Out] b^2*cot(d*x+c)*(b*tan(d*x+c)^4)^(1/2)/d-b^2*x*cot(d*x+c)^2*(b*tan(d*x+c)^4)
^(1/2)-1/3*b^2*(b*tan(d*x+c)^4)^(1/2)*tan(d*x+c)/d+1/5*b^2*(b*tan(d*x+c)^4)
^(1/2)*tan(d*x+c)^3/d-1/7*b^2*(b*tan(d*x+c)^4)^(1/2)*tan(d*x+c)^5/d+1/9*b^2
*(b*tan(d*x+c)^4)^(1/2)*tan(d*x+c)^7/d
```

Rubi [A] time = 0.06, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 8}

$$\frac{b^2\tan^7(c+dx)\sqrt{b\tan^4(c+dx)}}{9d}-\frac{b^2\tan^5(c+dx)\sqrt{b\tan^4(c+dx)}}{7d}+\frac{b^2\tan^3(c+dx)\sqrt{b\tan^4(c+dx)}}{5d}-\frac{b^2\tan(c+\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^4)^(5/2),x]
```

```
[Out] (b^2*Cot[c + d*x]*Sqrt[b*Tan[c + d*x]^4])/d - b^2*x*Cot[c + d*x]^2*Sqrt[b*T
an[c + d*x]^4] - (b^2*Tan[c + d*x]*Sqrt[b*Tan[c + d*x]^4])/(3*d) + (b^2*Tan
[c + d*x]^3*Sqrt[b*Tan[c + d*x]^4])/(5*d) - (b^2*Tan[c + d*x]^5*Sqrt[b*Tan[
c + d*x]^4])/(7*d) + (b^2*Tan[c + d*x]^7*Sqrt[b*Tan[c + d*x]^4])/(9*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
```

```
FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^4(c+dx)\right)^{5/2}\,dx = \left(b^2\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}\right)\int \tan^{10}(c+dx)\,dx$$
$$= \frac{b^2\tan^7(c+dx)\sqrt{b\tan^4(c+dx)}}{9d} - \left(b^2\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}\right)\int \tan^8(c+dx)\,d$$
$$= -\frac{b^2\tan^5(c+dx)\sqrt{b\tan^4(c+dx)}}{7d} + \frac{b^2\tan^7(c+dx)\sqrt{b\tan^4(c+dx)}}{9d} + \left(b^2\cot^2(c+d\right.$$
$$= \frac{b^2\tan^3(c+dx)\sqrt{b\tan^4(c+dx)}}{5d} - \frac{b^2\tan^5(c+dx)\sqrt{b\tan^4(c+dx)}}{7d} + \frac{b^2\tan^7(c+dx)}{9}$$
$$= -\frac{b^2\tan(c+dx)\sqrt{b\tan^4(c+dx)}}{3d} + \frac{b^2\tan^3(c+dx)\sqrt{b\tan^4(c+dx)}}{5d} - \frac{b^2\tan^5(c+dx)}{7}$$
$$= \frac{b^2\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - \frac{b^2\tan(c+dx)\sqrt{b\tan^4(c+dx)}}{3d} + \frac{b^2\tan^3(c+dx)\sqrt{b}}{5d}$$
$$= \frac{b^2\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - b^2x\cot^2(c+dx)\sqrt{b\tan^4(c+dx)} - \frac{b^2\tan(c+dx)\sqrt{}}{3d}$$

Mathematica [A] time = 0.76, size = 86, normalized size = 0.47

$$\frac{\cot(c+dx)\left(b\tan^4(c+dx)\right)^{5/2}\left(315\cot^8(c+dx)-105\cot^6(c+dx)+63\cot^4(c+dx)-45\cot^2(c+dx)-315\tan\right.}{315d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^4)^(5/2),x]
```

```
[Out] (Cot[c + d*x]*(35 - 45*Cot[c + d*x]^2 + 63*Cot[c + d*x]^4 - 105*Cot[c + d*x
]^6 + 315*Cot[c + d*x]^8 - 315*ArcTan[Tan[c + d*x]]*Cot[c + d*x]^9)*(b*Tan[
c + d*x]^4)^(5/2))/(315*d)
```

fricas [A] time = 1.11, size = 96, normalized size = 0.53

$$\frac{\left(35\,b^2\tan\left(dx+c\right)^9-45\,b^2\tan\left(dx+c\right)^7+63\,b^2\tan\left(dx+c\right)^5-105\,b^2\tan\left(dx+c\right)^3-315\,b^2dx+315\,b^2\tan\left(dx+\right.\right.}{315\,d\tan\left(dx+c\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/315*(35*b^2*tan(d*x + c)^9 - 45*b^2*tan(d*x + c)^7 + 63*b^2*tan(d*x + c)^
5 - 105*b^2*tan(d*x + c)^3 - 315*b^2*d*x + 315*b^2*tan(d*x + c))*sqrt(b*tan
(d*x + c)^4)/(d*tan(d*x + c)^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.12, size = 84, normalized size = 0.46

$$-\frac{\left(b\left(\tan^{4}\left(dx+c\right)\right)\right)^{\frac{5}{2}}\left(-35\left(\tan^{9}\left(dx+c\right)\right)+45\left(\tan^{7}\left(dx+c\right)\right)-63\left(\tan^{5}\left(dx+c\right)\right)+105\left(\tan^{3}\left(dx+c\right)\right)+315\right.}{315d\tan\left(dx+c\right)^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^4)^(5/2),x)
```

```
[Out] -1/315/d*(b*tan(d*x+c)^4)^(5/2)*(-35*tan(d*x+c)^9+45*tan(d*x+c)^7-63*tan(d*
x+c)^5+105*tan(d*x+c)^3+315*arctan(tan(d*x+c))-315*tan(d*x+c))/tan(d*x+c)^1
0
```

maxima [A] time = 0.84, size = 79, normalized size = 0.43

$$\frac{35\,b^{\frac{5}{2}}\tan\left(dx+c\right)^{9}-45\,b^{\frac{5}{2}}\tan\left(dx+c\right)^{7}+63\,b^{\frac{5}{2}}\tan\left(dx+c\right)^{5}-105\,b^{\frac{5}{2}}\tan\left(dx+c\right)^{3}-315\left(dx+c\right)b^{\frac{5}{2}}+315\,b^{\frac{5}{2}}\,\mathrm{t}}{315\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/315*(35*b^(5/2)*tan(d*x + c)^9 - 45*b^(5/2)*tan(d*x + c)^7 + 63*b^(5/2)*t
an(d*x + c)^5 - 105*b^(5/2)*tan(d*x + c)^3 - 315*(d*x + c)*b^(5/2) + 315*b^
(5/2)*tan(d*x + c))/d
```

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

$$\int {\left(b\,{\mathrm{tan}\left(c+d\,x\right)}^4\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^4)^(5/2),x)
```

```
[Out] int((b*tan(c + d*x)^4)^(5/2), x)
```

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

$$\int \left(b\tan^4(c+dx)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)**4*b)**(5/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**4)**(5/2), x)
```

3.37 $\int \left(b\tan^4(c+dx)\right)^{3/2}\,dx$

Optimal. Leaf size=110

$$-\frac{b\tan(c+dx)\sqrt{b\tan^4(c+dx)}}{3d}+\frac{b\tan^3(c+dx)\sqrt{b\tan^4(c+dx)}}{5d}-bx\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}+\frac{b\cot(c+dx)\cdot}{}$$

```
[Out] b*cot(d*x+c)*(b*tan(d*x+c)^4)^(1/2)/d-b*x*cot(d*x+c)^2*(b*tan(d*x+c)^4)^(1/
2)-1/3*b*(b*tan(d*x+c)^4)^(1/2)*tan(d*x+c)/d+1/5*b*(b*tan(d*x+c)^4)^(1/2)*t
an(d*x+c)^3/d
```

Rubi [A] time = 0.04, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 8}

$$\frac{b\tan^3(c+dx)\sqrt{b\tan^4(c+dx)}}{5d}-\frac{b\tan(c+dx)\sqrt{b\tan^4(c+dx)}}{3d}-bx\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}+\frac{b\cot(c+dx)\sqrt{\cdot}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^4)^(3/2),x]
```

```
[Out] (b*Cot[c + d*x]*Sqrt[b*Tan[c + d*x]^4])/d - b*x*Cot[c + d*x]^2*Sqrt[b*Tan[c
 + d*x]^4] - (b*Tan[c + d*x]*Sqrt[b*Tan[c + d*x]^4])/(3*d) + (b*Tan[c + d*x
]^3*Sqrt[b*Tan[c + d*x]^4])/(5*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}
\int \left(b\tan^4(c+dx)\right)^{3/2}\,dx &= \left(b\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}\right)\int \tan^6(c+dx)\,dx\\
&= \frac{b\tan^3(c+dx)\sqrt{b\tan^4(c+dx)}}{5d} - \left(b\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}\right)\int \tan^4(c+dx)\,dx\\
&= -\frac{b\tan(c+dx)\sqrt{b\tan^4(c+dx)}}{3d} + \frac{b\tan^3(c+dx)\sqrt{b\tan^4(c+dx)}}{5d} + \left(b\cot^2(c+dx)\sqrt{\right.\\
&= \frac{b\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - \frac{b\tan(c+dx)\sqrt{b\tan^4(c+dx)}}{3d} + \frac{b\tan^3(c+dx)\sqrt{b\tan}}{5d}\\
&= \frac{b\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - bx\cot^2(c+dx)\sqrt{b\tan^4(c+dx)} - \frac{b\tan(c+dx)\sqrt{b\tan}}{3d}
\end{aligned}$$

Mathematica [A] time = 0.77, size = 66, normalized size = 0.60

$$\frac{\cot(c+dx)\left(b\tan^4(c+dx)\right)^{3/2}\left(15\cot^4(c+dx)-5\cot^2(c+dx)-15\tan^{-1}(\tan(c+dx))\cot^5(c+dx)+3\right)}{15d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^4)^(3/2),x]
```

```
[Out] (Cot[c + d*x]*(3 - 5*Cot[c + d*x]^2 + 15*Cot[c + d*x]^4 - 15*ArcTan[Tan[c +
 d*x]]*Cot[c + d*x]^5)*(b*Tan[c + d*x]^4)^(3/2))/(15*d)
```

fricas [A] time = 1.14, size = 62, normalized size = 0.56

$$\frac{\left(3\,b\tan\left(dx+c\right)^5-5\,b\tan\left(dx+c\right)^3-15\,bdx+15\,b\tan\left(dx+c\right)\right)\sqrt{b\tan\left(dx+c\right)^4}}{15\,d\tan\left(dx+c\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/15*(3*b*tan(d*x + c)^5 - 5*b*tan(d*x + c)^3 - 15*b*d*x + 15*b*tan(d*x + c
))*sqrt(b*tan(d*x + c)^4)/(d*tan(d*x + c)^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x
/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/
x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check
 sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)sq
rt(b)*b*(-60*d*x*tan(c)^5*tan(d*x)^5+300*d*x*tan(c)^4*tan(d*x)^4-600*d*x*ta
n(c)^3*tan(d*x)^3+600*d*x*tan(c)^2*tan(d*x)^2-300*d*x*tan(c)*tan(d*x)+60*d*
x-15*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*t
an(c)^5*tan(d*x)^5+75*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan
(c)-2*tan(d*x))*tan(c)^4*tan(d*x)^4-150*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c
)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)^3*tan(d*x)^3+150*pi*sign(2*tan(c)^
2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)^2*tan(d*x)^2-75*
pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)
*tan(d*x)+15*pi*sign(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan
(d*x))-15*pi*tan(c)^5*tan(d*x)^5+75*pi*tan(c)^4*tan(d*x)^4-150*pi*tan(c)^3*
tan(d*x)^3+150*pi*tan(c)^2*tan(d*x)^2-75*pi*tan(c)*tan(d*x)+15*pi+30*atan((
tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^5*tan(d*x)^5-150*atan((tan(c)*
tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)^4*tan(d*x)^4+300*atan((tan(c)*tan(d*x
)-1)/(tan(c)+tan(d*x)))*tan(c)^3*tan(d*x)^3-300*atan((tan(c)*tan(d*x)-1)/(t
an(c)+tan(d*x)))*tan(c)^2*tan(d*x)^2+150*atan((tan(c)*tan(d*x)-1)/(tan(c)+t
an(d*x)))*tan(c)*tan(d*x)-30*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))+30
*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^5*tan(d*x)^5-150*atan((
tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^4*tan(d*x)^4+300*atan((tan(c)+
tan(d*x))/(tan(c)*tan(d*x)-1))*tan(c)^3*tan(d*x)^3-300*atan((tan(c)+tan(d*x
))/(tan(c)*tan(d*x)-1))*tan(c)^2*tan(d*x)^2+150*atan((tan(c)+tan(d*x))/(tan
(c)*tan(d*x)-1))*tan(c)*tan(d*x)-30*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)
-1))-60*tan(c)^5*tan(d*x)^4+20*tan(c)^5*tan(d*x)^2-12*tan(c)^5-60*tan(c)^4*
tan(d*x)^5+300*tan(c)^4*tan(d*x)^3-100*tan(c)^4*tan(d*x)+300*tan(c)^3*tan(d
*x)^4-600*tan(c)^3*tan(d*x)^2+20*tan(c)^3+20*tan(c)^2*tan(d*x)^5-600*tan(c)
^2*tan(d*x)^3+300*tan(c)^2*tan(d*x)-100*tan(c)*tan(d*x)^4+300*tan(c)*tan(d*
x)^2-60*tan(c)-12*tan(d*x)^5+20*tan(d*x)^3-60*tan(d*x))/(60*d*tan(c)^5*tan(
d*x)^5-300*d*tan(c)^4*tan(d*x)^4+600*d*tan(c)^3*tan(d*x)^3-600*d*tan(c)^2*t
an(d*x)^2+300*d*tan(c)*tan(d*x)-60*d)
```

maple [A] time = 0.07, size = 64, normalized size = 0.58

$$-\frac{\left(b\left(\tan^{4}\left(dx+c\right)\right)\right)^{\frac{3}{2}}\left(-3\left(\tan^{5}\left(dx+c\right)\right)+5\left(\tan^{3}\left(dx+c\right)\right)+15\arctan\left(\tan\left(dx+c\right)\right)-15\tan\left(dx+c\right)\right)}{15d\tan\left(dx+c\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^4)^(3/2),x)
```

```
[Out] -1/15/d*(b*tan(d*x+c)^4)^(3/2)*(-3*tan(d*x+c)^5+5*tan(d*x+c)^3+15*arctan(ta
n(d*x+c))-15*tan(d*x+c))/tan(d*x+c)^6
```

maxima [A] time = 0.50, size = 53, normalized size = 0.48

$$\frac{3\,b^{\frac{3}{2}}\tan\left(dx+c\right)^{5}-5\,b^{\frac{3}{2}}\tan\left(dx+c\right)^{3}-15\,(dx+c)b^{\frac{3}{2}}+15\,b^{\frac{3}{2}}\tan\left(dx+c\right)}{15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/15*(3*b^(3/2)*tan(d*x + c)^5 - 5*b^(3/2)*tan(d*x + c)^3 - 15*(d*x + c)*b^
(3/2) + 15*b^(3/2)*tan(d*x + c))/d
```

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

$$\int {\left(b\,{\mathrm{tan}\left(c+d\,x\right)}^4\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^4)^(3/2),x)
```

```
[Out] int((b*tan(c + d*x)^4)^(3/2), x)
```

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

$$\int \left(b \tan^{4}{\left(c + dx \right)}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)**4*b)**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**4)**(3/2), x)
```

3.38 $\int \sqrt{b \tan^4(c+dx)}\, dx$

Optimal. Leaf size=50

$$\frac{\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - x\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}$$

```
[Out] cot(d*x+c)*(b*tan(d*x+c)^4)^(1/2)/d-x*cot(d*x+c)^2*(b*tan(d*x+c)^4)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 8}

$$\frac{\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - x\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[c + d*x]^4],x]
```

```
[Out] (Cot[c + d*x]*Sqrt[b*Tan[c + d*x]^4])/d - x*Cot[c + d*x]^2*Sqrt[b*Tan[c + d
*x]^4]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int \sqrt{b\tan^4(c+dx)}\,dx &= \left(\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}\right)\int \tan^2(c+dx)\,dx\\ &= \frac{\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - \left(\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}\right)\int 1\,dx\\ &= \frac{\cot(c+dx)\sqrt{b\tan^4(c+dx)}}{d} - x\cot^2(c+dx)\sqrt{b\tan^4(c+dx)}\end{aligned}$$

Mathematica [**A**] time = 0.10, size = 41, normalized size = 0.82

$$-\frac{\cot(c+dx)\sqrt{b\tan^4(c+dx)}\,\left(\tan^{-1}(\tan(c+dx))\cot(c+dx)-1\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[c + d*x]^4],x]
```

```
[Out] -((Cot[c + d*x]*(-1 + ArcTan[Tan[c + d*x]]*Cot[c + d*x])*Sqrt[b*Tan[c + d*x
]^4])/d)
```

fricas [**A**] time = 1.03, size = 37, normalized size = 0.74

$$-\frac{\sqrt{b\tan\left(dx+c\right)^4}\,(dx-\tan\left(dx+c\right))}{d\tan\left(dx+c\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(1/2),x, algorithm="fricas")
```

```
[Out] -sqrt(b*tan(d*x + c)^4)*(d*x - tan(d*x + c))/(d*tan(d*x + c)^2)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)sqrt(b)*(-4*d*x*tan(c)*tan(d*x)+4*d*x-pi*sign(2*tan(c)
```

```
^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))*tan(c)*tan(d*x)+pi*sig
n(2*tan(c)^2*tan(d*x)+2*tan(c)*tan(d*x)^2-2*tan(c)-2*tan(d*x))-pi*tan(c)*ta
n(d*x)+pi+2*atan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))*tan(c)*tan(d*x)-2*a
tan((tan(c)*tan(d*x)-1)/(tan(c)+tan(d*x)))+2*atan((tan(c)+tan(d*x))/(tan(c)
*tan(d*x)-1))*tan(c)*tan(d*x)-2*atan((tan(c)+tan(d*x))/(tan(c)*tan(d*x)-1))
-4*tan(c)-4*tan(d*x))/(4*d*tan(c)*tan(d*x)-4*d)
```

maple [A] time = 0.10, size = 42, normalized size = 0.84

$$-\frac{\sqrt{b\left(\tan^4(dx+c)\right)}\,\left(-\tan(dx+c)+\arctan(\tan(dx+c))\right)}{d\tan(dx+c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^4)^(1/2),x)
[Out] -1/d*(b*tan(d*x+c)^4)^(1/2)*(-tan(d*x+c)+arctan(tan(d*x+c)))/tan(d*x+c)^2
```

maxima [A] time = 0.64, size = 26, normalized size = 0.52

$$-\frac{(dx+c)\sqrt{b}-\sqrt{b}\tan(dx+c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^(1/2),x, algorithm="maxima")
[Out] -((d*x + c)*sqrt(b) - sqrt(b)*tan(d*x + c))/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{b\tan(c+d\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^4)^(1/2),x)
[Out] int((b*tan(c + d*x)^4)^(1/2), x)
```

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

$$\int \sqrt{b\tan^4(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)**4*b)**(1/2),x)
[Out] Integral(sqrt(b*tan(c + d*x)**4), x)
```

3.39 $\int \frac{1}{\sqrt{b\tan^4(c+dx)}}\,dx$

Optimal. Leaf size=51

$$-\frac{\tan(c+dx)}{d\sqrt{b\tan^4(c+dx)}}-\frac{x\tan^2(c+dx)}{\sqrt{b\tan^4(c+dx)}}$$

```
[Out] -tan(d*x+c)/d/(b*tan(d*x+c)^4)^(1/2)-x*tan(d*x+c)^2/(b*tan(d*x+c)^4)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 8}

$$-\frac{x\tan^2(c+dx)}{\sqrt{b\tan^4(c+dx)}}-\frac{\tan(c+dx)}{d\sqrt{b\tan^4(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[b*Tan[c + d*x]^4],x]
```

```
[Out] -(Tan[c + d*x]/(d*Sqrt[b*Tan[c + d*x]^4])) - (x*Tan[c + d*x]^2)/Sqrt[b*Tan[
c + d*x]^4]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] && !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \frac{1}{\sqrt{b\tan^4(c+dx)}}\,dx = \frac{\tan^2(c+dx)\int \cot^2(c+dx)\,dx}{\sqrt{b\tan^4(c+dx)}}$$
$$= -\frac{\tan(c+dx)}{d\sqrt{b\tan^4(c+dx)}} - \frac{\tan^2(c+dx)\int 1\,dx}{\sqrt{b\tan^4(c+dx)}}$$
$$= -\frac{\tan(c+dx)}{d\sqrt{b\tan^4(c+dx)}} - \frac{x\tan^2(c+dx)}{\sqrt{b\tan^4(c+dx)}}$$

Mathematica [C] time = 0.05, size = 43, normalized size = 0.84

$$-\frac{\tan(c+dx)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\tan^2(c+dx)\right)}{d\sqrt{b\tan^4(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[b*Tan[c + d*x]^4],x]
```

```
[Out] -((Hypergeometric2F1[-1/2, 1, 1/2, -Tan[c + d*x]^2]*Tan[c + d*x])/(d*Sqrt[b
*Tan[c + d*x]^4]))
```

fricas [A] time = 0.94, size = 39, normalized size = 0.76

$$-\frac{\sqrt{b\tan\left(dx+c\right)^4}\left(dx\tan\left(dx+c\right)+1\right)}{bd\tan\left(dx+c\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(1/2),x, algorithm="fricas")
```

```
[Out] -sqrt(b*tan(d*x + c)^4)*(d*x*tan(d*x + c) + 1)/(b*d*tan(d*x + c)^3)
```

giac [A] time = 0.71, size = 45, normalized size = 0.88

$$-\frac{\frac{2\,(dx+c)}{\sqrt{b}} - \frac{\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)}{\sqrt{b}} + \frac{1}{\sqrt{b}\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*(2*(d*x + c)/sqrt(b) - tan(1/2*d*x + 1/2*c)/sqrt(b) + 1/(sqrt(b)*tan(1
/2*d*x + 1/2*c)))/d
```

maple [A] time = 0.12, size = 40, normalized size = 0.78

$$-\frac{\tan \left(dx+c\right) \left(\arctan \left(\tan \left(dx+c\right)\right) \tan \left(dx+c\right)+1\right)}{d\sqrt{b\left(\tan^{4}\left(dx+c\right)\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^4)^(1/2),x)
[Out] -1/d*tan(d*x+c)*(arctan(tan(d*x+c))*tan(d*x+c)+1)/(b*tan(d*x+c)^4)^(1/2)
```

maxima [A] time = 0.69, size = 27, normalized size = 0.53

$$-\frac{\frac{dx+c}{\sqrt{b}}+\frac{1}{\sqrt{b}\tan(dx+c)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(1/2),x, algorithm="maxima")
[Out] -((d*x + c)/sqrt(b) + 1/(sqrt(b)*tan(d*x + c)))/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\sqrt{b\tan\left(c+d\,x\right)^4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^4)^(1/2),x)
[Out] int(1/(b*tan(c + d*x)^4)^(1/2), x)
```

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

$$\int \frac{1}{\sqrt{b\tan^{4}\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)**4*b)**(1/2),x)
[Out] Integral(1/sqrt(b*tan(c + d*x)**4), x)
```

3.40 $\int \frac{1}{\left(b\tan^4(c+dx)\right)^{3/2}}\,dx$

Optimal. Leaf size=119

$$-\frac{\tan(c+dx)}{bd\sqrt{b\tan^4(c+dx)}}-\frac{x\tan^2(c+dx)}{b\sqrt{b\tan^4(c+dx)}}-\frac{\cot^3(c+dx)}{5bd\sqrt{b\tan^4(c+dx)}}+\frac{\cot(c+dx)}{3bd\sqrt{b\tan^4(c+dx)}}$$

```
[Out] 1/3*cot(d*x+c)/b/d/(b*tan(d*x+c)^4)^(1/2)-1/5*cot(d*x+c)^3/b/d/(b*tan(d*x+c
)^4)^(1/2)-tan(d*x+c)/b/d/(b*tan(d*x+c)^4)^(1/2)-x*tan(d*x+c)^2/b/(b*tan(d*
x+c)^4)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 8}

$$-\frac{x\tan^2(c+dx)}{b\sqrt{b\tan^4(c+dx)}}-\frac{\tan(c+dx)}{bd\sqrt{b\tan^4(c+dx)}}-\frac{\cot^3(c+dx)}{5bd\sqrt{b\tan^4(c+dx)}}+\frac{\cot(c+dx)}{3bd\sqrt{b\tan^4(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^4)^(-3/2),x]
```

```
[Out] Cot[c + d*x]/(3*b*d*Sqrt[b*Tan[c + d*x]^4]) - Cot[c + d*x]^3/(5*b*d*Sqrt[b*
Tan[c + d*x]^4]) - Tan[c + d*x]/(b*d*Sqrt[b*Tan[c + d*x]^4]) - (x*Tan[c + d
*x]^2)/(b*Sqrt[b*Tan[c + d*x]^4])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] && !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
```

```
FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$
\begin{aligned}
\int \frac{1}{\left(b\tan^4(c+dx)\right)^{3/2}}\,dx &= \frac{\tan^2(c+dx)\int \cot^6(c+dx)\,dx}{b\sqrt{b\tan^4(c+dx)}}\\
&= -\frac{\cot^3(c+dx)}{5bd\sqrt{b\tan^4(c+dx)}} - \frac{\tan^2(c+dx)\int \cot^4(c+dx)\,dx}{b\sqrt{b\tan^4(c+dx)}}\\
&= \frac{\cot(c+dx)}{3bd\sqrt{b\tan^4(c+dx)}} - \frac{\cot^3(c+dx)}{5bd\sqrt{b\tan^4(c+dx)}} + \frac{\tan^2(c+dx)\int \cot^2(c+dx)\,dx}{b\sqrt{b\tan^4(c+dx)}}\\
&= \frac{\cot(c+dx)}{3bd\sqrt{b\tan^4(c+dx)}} - \frac{\cot^3(c+dx)}{5bd\sqrt{b\tan^4(c+dx)}} - \frac{\tan(c+dx)}{bd\sqrt{b\tan^4(c+dx)}} - \frac{\tan^2(c+dx)\int 1}{b\sqrt{b\tan^4(c+dx}}\\
&= \frac{\cot(c+dx)}{3bd\sqrt{b\tan^4(c+dx)}} - \frac{\cot^3(c+dx)}{5bd\sqrt{b\tan^4(c+dx)}} - \frac{\tan(c+dx)}{bd\sqrt{b\tan^4(c+dx)}} - \frac{x\tan^2(c+dx)}{b\sqrt{b\tan^4(c+dx}}
\end{aligned}
$$

Mathematica [C] time = 0.05, size = 45, normalized size = 0.38

$$-\frac{\tan(c+dx)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\tan^2(c+dx)\right)}{5d\left(b\tan^4(c+dx)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^4)^(-3/2),x]
```

```
[Out] -1/5*(Hypergeometric2F1[-5/2, 1, -3/2, -Tan[c + d*x]^2]*Tan[c + d*x])/(d*(b
*Tan[c + d*x]^4)^(3/2))
```

fricas [A] time = 0.78, size = 62, normalized size = 0.52

$$-\frac{\left(15\,dx\tan\left(dx+c\right)^{5}+15\,\tan\left(dx+c\right)^{4}-5\,\tan\left(dx+c\right)^{2}+3\right)\sqrt{b\tan\left(dx+c\right)^{4}}}{15\,b^{2}d\tan\left(dx+c\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/15*(15*d*x*tan(d*x + c)^5 + 15*tan(d*x + c)^4 - 5*tan(d*x + c)^2 + 3)*sq
rt(b*tan(d*x + c)^4)/(b^2*d*tan(d*x + c)^7)
```

giac [A] time = 4.34, size = 124, normalized size = 1.04

$$-\frac{\frac{480\,(dx+c)}{\sqrt{b}} - \frac{3\,b^{\frac{9}{2}}\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^5 - 35\,b^{\frac{9}{2}}\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3 + 330\,b^{\frac{9}{2}}\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)}{b^5} + \frac{330\,\sqrt{b}\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^4 - 35\,\sqrt{b}\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2 + 3\,\sqrt{b}}{b\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^5}}{480\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(3/2),x, algorithm="giac")
```

```
[Out] -1/480*(480*(d*x + c)/sqrt(b) - (3*b^(9/2)*tan(1/2*d*x + 1/2*c)^5 - 35*b^(9
/2)*tan(1/2*d*x + 1/2*c)^3 + 330*b^(9/2)*tan(1/2*d*x + 1/2*c))/b^5 + (330*s
qrt(b)*tan(1/2*d*x + 1/2*c)^4 - 35*sqrt(b)*tan(1/2*d*x + 1/2*c)^2 + 3*sqrt(
b))/(b*tan(1/2*d*x + 1/2*c)^5))/(b*d)
```

maple [A] time = 0.10, size = 63, normalized size = 0.53

$$-\frac{\tan\left(dx+c\right)\left(15\arctan\left(\tan\left(dx+c\right)\right)\left(\tan^5\left(dx+c\right)\right)+15\left(\tan^4\left(dx+c\right)\right)-5\left(\tan^2\left(dx+c\right)\right)+3\right)}{15d\left(b\left(\tan^4\left(dx+c\right)\right)\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^4)^(3/2),x)
```

```
[Out] -1/15/d*tan(d*x+c)*(15*arctan(tan(d*x+c))*tan(d*x+c)^5+15*tan(d*x+c)^4-5*ta
n(d*x+c)^2+3)/(b*tan(d*x+c)^4)^(3/2)
```

maxima [A] time = 0.51, size = 50, normalized size = 0.42

$$-\frac{\frac{15\,(dx+c)}{b^{\frac{3}{2}}} + \frac{15\,\tan(dx+c)^4 - 5\,\tan(dx+c)^2 + 3}{b^{\frac{3}{2}}\tan(dx+c)^5}}{15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/15*(15*(d*x + c)/b^(3/2) + (15*tan(d*x + c)^4 - 5*tan(d*x + c)^2 + 3)/(b
^(3/2)*tan(d*x + c)^5))/d
```

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

$$\int \frac{1}{\left(b\tan\left(c+d\,x\right)^4\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^4)^(3/2),x)
```

```
[Out] int(1/(b*tan(c + d*x)^4)^(3/2), x)
```

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

$$\int \frac{1}{\left(b\tan^4\left(c+dx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)**4*b)**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**4)**(-3/2), x)
```

3.41 $\int \frac{1}{\left(b\tan^4(c+dx)\right)^{5/2}}\,dx$

Optimal. Leaf size=183

$$-\frac{\tan(c+dx)}{b^2d\sqrt{b\tan^4(c+dx)}}-\frac{x\tan^2(c+dx)}{b^2\sqrt{b\tan^4(c+dx)}}-\frac{\cot^7(c+dx)}{9b^2d\sqrt{b\tan^4(c+dx)}}+\frac{\cot^5(c+dx)}{7b^2d\sqrt{b\tan^4(c+dx)}}-\frac{\cot^3(c+dx)}{5b^2d\sqrt{b\tan^4(c+dx)}}$$

```
[Out] 1/3*cot(d*x+c)/b^2/d/(b*tan(d*x+c)^4)^(1/2)-1/5*cot(d*x+c)^3/b^2/d/(b*tan(d
*x+c)^4)^(1/2)+1/7*cot(d*x+c)^5/b^2/d/(b*tan(d*x+c)^4)^(1/2)-1/9*cot(d*x+c)
^7/b^2/d/(b*tan(d*x+c)^4)^(1/2)-tan(d*x+c)/b^2/d/(b*tan(d*x+c)^4)^(1/2)-x*t
an(d*x+c)^2/b^2/(b*tan(d*x+c)^4)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3658, 3473, 8}

$$-\frac{x\tan^2(c+dx)}{b^2\sqrt{b\tan^4(c+dx)}}-\frac{\tan(c+dx)}{b^2d\sqrt{b\tan^4(c+dx)}}-\frac{\cot^7(c+dx)}{9b^2d\sqrt{b\tan^4(c+dx)}}+\frac{\cot^5(c+dx)}{7b^2d\sqrt{b\tan^4(c+dx)}}-\frac{\cot^3(c+dx)}{5b^2d\sqrt{b\tan^4(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^4)^(-5/2),x]
```

```
[Out] Cot[c + d*x]/(3*b^2*d*Sqrt[b*Tan[c + d*x]^4]) - Cot[c + d*x]^3/(5*b^2*d*Sqr
t[b*Tan[c + d*x]^4]) + Cot[c + d*x]^5/(7*b^2*d*Sqrt[b*Tan[c + d*x]^4]) - Co
t[c + d*x]^7/(9*b^2*d*Sqrt[b*Tan[c + d*x]^4]) - Tan[c + d*x]/(b^2*d*Sqrt[b*
Tan[c + d*x]^4]) - (x*Tan[c + d*x]^2)/(b^2*Sqrt[b*Tan[c + d*x]^4])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] && !IntegerQ[p]
```

```
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
 FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \frac{1}{\left(b\tan^4(c+dx)\right)^{5/2}}\,dx = \frac{\tan^2(c+dx)\int \cot^{10}(c+dx)\,dx}{b^2\sqrt{b\tan^4(c+dx)}}$$

$$= -\frac{\cot^7(c+dx)}{9b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\tan^2(c+dx)\int \cot^8(c+dx)\,dx}{b^2\sqrt{b\tan^4(c+dx)}}$$

$$= \frac{\cot^5(c+dx)}{7b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^7(c+dx)}{9b^2d\sqrt{b\tan^4(c+dx)}} + \frac{\tan^2(c+dx)\int \cot^6(c+dx)\,dx}{b^2\sqrt{b\tan^4(c+dx)}}$$

$$= -\frac{\cot^3(c+dx)}{5b^2d\sqrt{b\tan^4(c+dx)}} + \frac{\cot^5(c+dx)}{7b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^7(c+dx)}{9b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\tan^2(c+d}{b^2\sqrt{b}$$

$$= \frac{\cot(c+dx)}{3b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^3(c+dx)}{5b^2d\sqrt{b\tan^4(c+dx)}} + \frac{\cot^5(c+dx)}{7b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^7(c+}{9b^2d\sqrt{b\tan}}$$

$$= \frac{\cot(c+dx)}{3b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^3(c+dx)}{5b^2d\sqrt{b\tan^4(c+dx)}} + \frac{\cot^5(c+dx)}{7b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^7(c+}{9b^2d\sqrt{b\tan}}$$

$$= \frac{\cot(c+dx)}{3b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^3(c+dx)}{5b^2d\sqrt{b\tan^4(c+dx)}} + \frac{\cot^5(c+dx)}{7b^2d\sqrt{b\tan^4(c+dx)}} - \frac{\cot^7(c+}{9b^2d\sqrt{b\tan}}$$

Mathematica [C] time = 0.04, size = 45, normalized size = 0.25

$$-\frac{\tan(c+dx)\,{}_2F_1\left(-\frac{9}{2},1;-\frac{7}{2};-\tan^2(c+dx)\right)}{9d\left(b\tan^4(c+dx)\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^4)^(-5/2),x]
```

```
[Out] -1/9*(Hypergeometric2F1[-9/2, 1, -7/2, -Tan[c + d*x]^2]*Tan[c + d*x])/(d*(b
*Tan[c + d*x]^4)^(5/2))
```

fricas [A] time = 0.80, size = 82, normalized size = 0.45

$$-\frac{\left(315\,dx\tan\left(dx+c\right)^9+315\,\tan\left(dx+c\right)^8-105\,\tan\left(dx+c\right)^6+63\,\tan\left(dx+c\right)^4-45\,\tan\left(dx+c\right)^2+35\right)\sqrt{b\tan}}{315\,b^3d\tan\left(dx+c\right)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/315*(315*d*x*tan(d*x + c)^9 + 315*tan(d*x + c)^8 - 105*tan(d*x + c)^6 +
63*tan(d*x + c)^4 - 45*tan(d*x + c)^2 + 35)*sqrt(b*tan(d*x + c)^4)/(b^3*d*t
an(d*x + c)^11)
```

giac [A] time = 8.36, size = 185, normalized size = 1.01

$$-\frac{\frac{161280\,(dx+c)}{b^{\frac{5}{2}}}+\frac{121590\,\sqrt{b}\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{8}-18480\,\sqrt{b}\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{6}+3528\,\sqrt{b}\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{4}-495\,\sqrt{b}\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{2}+35\,\sqrt{b}}{b^{3}\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^{9}}-\frac{35\,b^{\frac{49}{2}}\,\mathrm{t}}{}}{161280\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(5/2),x, algorithm="giac")
```

```
[Out] -1/161280*(161280*(d*x + c)/b^(5/2) + (121590*sqrt(b)*tan(1/2*d*x + 1/2*c)^
8 - 18480*sqrt(b)*tan(1/2*d*x + 1/2*c)^6 + 3528*sqrt(b)*tan(1/2*d*x + 1/2*c
)^4 - 495*sqrt(b)*tan(1/2*d*x + 1/2*c)^2 + 35*sqrt(b))/(b^3*tan(1/2*d*x + 1
/2*c)^9) - (35*b^(49/2)*tan(1/2*d*x + 1/2*c)^9 - 495*b^(49/2)*tan(1/2*d*x +
 1/2*c)^7 + 3528*b^(49/2)*tan(1/2*d*x + 1/2*c)^5 - 18480*b^(49/2)*tan(1/2*d
*x + 1/2*c)^3 + 121590*b^(49/2)*tan(1/2*d*x + 1/2*c))/b^27)/d
```

maple [A] time = 0.10, size = 83, normalized size = 0.45

$$-\frac{\tan\left(dx+c\right)\left(315\arctan\left(\tan\left(dx+c\right)\right)\left(\tan^{9}\left(dx+c\right)\right)+315\left(\tan^{8}\left(dx+c\right)\right)-105\left(\tan^{6}\left(dx+c\right)\right)+63\left(\tan^{4}\left(\right.\right.\right.}{315d\left(b\left(\tan^{4}\left(dx+c\right)\right)\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^4)^(5/2),x)
```

```
[Out] -1/315/d*tan(d*x+c)*(315*arctan(tan(d*x+c))*tan(d*x+c)^9+315*tan(d*x+c)^8-1
05*tan(d*x+c)^6+63*tan(d*x+c)^4-45*tan(d*x+c)^2+35)/(b*tan(d*x+c)^4)^(5/2)
```

maxima [A] time = 0.95, size = 70, normalized size = 0.38

$$-\frac{\frac{315\,(dx+c)}{b^{\frac{5}{2}}}+\frac{315\,\tan(dx+c)^{8}-105\,\tan(dx+c)^{6}+63\,\tan(dx+c)^{4}-45\,\tan(dx+c)^{2}+35}{b^{\frac{5}{2}}\tan(dx+c)^{9}}}{315\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)^4*b)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/315*(315*(d*x + c)/b^(5/2) + (315*tan(d*x + c)^8 - 105*tan(d*x + c)^6 +
63*tan(d*x + c)^4 - 45*tan(d*x + c)^2 + 35)/(b^(5/2)*tan(d*x + c)^9))/d
```

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

$$\int \frac{1}{\left(b\tan\left(c+d\,x\right)^4\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^4)^(5/2),x)
```

```
[Out] int(1/(b*tan(c + d*x)^4)^(5/2), x)
```

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

$$\int \frac{1}{\left(b\tan^{4}\left(c+dx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(tan(d*x+c)**4*b)**(5/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**4)**(-5/2), x)
```

3.42 $\int (b\tan^p(c+dx))^n \, dx$

Optimal. Leaf size=59

$$\frac{\tan(c+dx)\,(b\tan^p(c+dx))^n\;{}_2F_1\left(1,\frac{1}{2}(np+1);\frac{1}{2}(np+3);-\tan^2(c+dx)\right)}{d(np+1)}$$

```
[Out] hypergeom([1, 1/2*n*p+1/2],[1/2*n*p+3/2],-tan(d*x+c)^2)*tan(d*x+c)*(b*tan(d
*x+c)^p)^n/d/(n*p+1)
```

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3659, 3476, 364}

$$\frac{\tan(c+dx)\,(b\tan^p(c+dx))^n\;{}_2F_1\left(1,\frac{1}{2}(np+1);\frac{1}{2}(np+3);-\tan^2(c+dx)\right)}{d(np+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^p)^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + n*p)/2, (3 + n*p)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]*(b*Tan[c + d*x]^p)^n)/(d*(1 + n*p))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] && !IntegerQ[p] && !IntegerQ[n] && (EqQ[u, 1] || Mat
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
```

```
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int (b\tan^p(c+dx))^n\,dx = \left(\tan^{-np}(c+dx)\,(b\tan^p(c+dx))^n\right)\int \tan^{np}(c+dx)\,dx$$
$$= \frac{\left(\tan^{-np}(c+dx)\,(b\tan^p(c+dx))^n\right)\text{Subst}\left(\int \frac{x^{np}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{{}_2F_1\left(1,\frac{1}{2}(1+np);\frac{1}{2}(3+np);-\tan^2(c+dx)\right)\tan(c+dx)\,(b\tan^p(c+dx))^n}{d(1+np)}$$

Mathematica [A] time = 0.05, size = 57, normalized size = 0.97

$$\frac{\tan(c+dx)\,(b\tan^p(c+dx))^n\;{}_2F_1\left(1,\frac{1}{2}(np+1);\frac{1}{2}(np+3);-\tan^2(c+dx)\right)}{dnp+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^p)^n,x]
[Out] (Hypergeometric2F1[1, (1 + n*p)/2, (3 + n*p)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]*(b*Tan[c + d*x]^p)^n)/(d + d*n*p)
```

fricas [F] time = 1.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(dx+c\right)^p\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^n,x, algorithm="fricas")
[Out] integral((b*tan(d*x + c)^p)^n, x)
```

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

$$\int \left(b\tan\left(dx+c\right)^p\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c)^p)^n, x)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int (b (\tan^p (dx + c)))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^p)^n,x)
[Out] int((b*tan(d*x+c)^p)^n,x)
```

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

$$\int \left(b \tan (dx + c)^p\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^n,x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^p)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(b \tan (c + d\,x)^p\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^p)^n,x)
[Out] int((b*tan(c + d*x)^p)^n, x)
```

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

$$\int (b \tan^p (c + dx))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**p)**n,x)
[Out] Integral((b*tan(c + d*x)**p)**n, x)
```

3.43 $\int \left(b\tan^2(c+dx)\right)^n\,dx$

Optimal. Leaf size=59

$$\frac{\tan(c+dx)\left(b\tan^2(c+dx)\right)^n {}_2F_1\left(1,\frac{1}{2}(2n+1);\frac{1}{2}(2n+3);-\tan^2(c+dx)\right)}{d(2n+1)}$$

```
[Out] hypergeom([1, 1/2+n],[3/2+n],-tan(d*x+c)^2)*tan(d*x+c)*(b*tan(d*x+c)^2)^n/d
/(1+2*n)
```

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3658, 3476, 364}

$$\frac{\tan(c+dx)\left(b\tan^2(c+dx)\right)^n {}_2F_1\left(1,\frac{1}{2}(2n+1);\frac{1}{2}(2n+3);-\tan^2(c+dx)\right)}{d(2n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^2)^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + 2*n)/2, (3 + 2*n)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]*(b*Tan[c + d*x]^2)^n)/(d*(1 + 2*n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
```

```
FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^2(c+dx)\right)^n\,dx = \left(\tan^{-2n}(c+dx)\left(b\tan^2(c+dx)\right)^n\right)\int \tan^{2n}(c+dx)\,dx$$
$$= \frac{\left(\tan^{-2n}(c+dx)\left(b\tan^2(c+dx)\right)^n\right)\text{Subst}\left(\int \frac{x^{2n}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{{}_2F_1\left(1,\frac{1}{2}(1+2n);\frac{1}{2}(3+2n);-\tan^2(c+dx)\right)\tan(c+dx)\left(b\tan^2(c+dx)\right)^n}{d(1+2n)}$$

Mathematica [A] time = 0.05, size = 49, normalized size = 0.83

$$\frac{\tan(c+dx)\left(b\tan^2(c+dx)\right)^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};-\tan^2(c+dx)\right)}{2dn+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^2)^n,x]
```

```
[Out] (Hypergeometric2F1[1, 1/2 + n, 3/2 + n, -Tan[c + d*x]^2]*Tan[c + d*x]*(b*Ta
n[c + d*x]^2)^n)/(d + 2*d*n)
```

fricas [F] time = 1.14, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(dx+c\right)^2\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^n,x, algorithm="fricas")
```

```
[Out] integral((b*tan(d*x + c)^2)^n, x)
```

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

$$\int \left(b\tan\left(dx+c\right)^2\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c)^2)^n, x)
```

maple [F] time = 0.57, size = 0, normalized size = 0.00

$$\int \left(b \left(\tan^2 (dx+c)\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^2)^n,x)
[Out] int((b*tan(d*x+c)^2)^n,x)
```

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

$$\int \left(b \tan (dx+c)^2\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^2)^n,x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^2)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(b \tan (c+d\,x)^2\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^2)^n,x)
[Out] int((b*tan(c + d*x)^2)^n, x)
```

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

$$\int \left(b \tan^2 (c+dx)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**2)**n,x)
[Out] Integral((b*tan(c + d*x)**2)**n, x)
```

3.44 $\int \left(b \tan^3(c+dx)\right)^n \, dx$

Optimal. Leaf size=57

$$\frac{\tan(c+dx)\left(b\tan^3(c+dx)\right)^n {}_2F_1\left(1,\frac{1}{2}(3n+1);\frac{3(n+1)}{2};-\tan^2(c+dx)\right)}{d(3n+1)}$$

```
[Out] hypergeom([1, 1/2+3/2*n],[3/2+3/2*n],-tan(d*x+c)^2)*tan(d*x+c)*(b*tan(d*x+c
)^3)^n/d/(1+3*n)
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3658, 3476, 364}

$$\frac{\tan(c+dx)\left(b\tan^3(c+dx)\right)^n {}_2F_1\left(1,\frac{1}{2}(3n+1);\frac{3(n+1)}{2};-\tan^2(c+dx)\right)}{d(3n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^3)^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + 3*n)/2, (3*(1 + n))/2, -Tan[c + d*x]^2]*Tan[c +
d*x]*(b*Tan[c + d*x]^3)^n)/(d*(1 + 3*n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] && !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
```

```
FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^3(c+dx)\right)^n\,dx = \left(\tan^{-3n}(c+dx)\left(b\tan^3(c+dx)\right)^n\right)\int \tan^{3n}(c+dx)\,dx$$
$$= \frac{\left(\tan^{-3n}(c+dx)\left(b\tan^3(c+dx)\right)^n\right)\text{Subst}\left(\int \frac{x^{3n}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{{}_2F_1\left(1,\frac{1}{2}(1+3n);\frac{3(1+n)}{2};-\tan^2(c+dx)\right)\tan(c+dx)\left(b\tan^3(c+dx)\right)^n}{d(1+3n)}$$

Mathematica [A] time = 0.04, size = 55, normalized size = 0.96

$$\frac{\tan(c+dx)\left(b\tan^3(c+dx)\right)^n\,{}_2F_1\left(1,\frac{1}{2}(3n+1);\frac{3(n+1)}{2};-\tan^2(c+dx)\right)}{3dn+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^3)^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + 3*n)/2, (3*(1 + n))/2, -Tan[c + d*x]^2]*Tan[c +
d*x]*(b*Tan[c + d*x]^3)^n)/(d + 3*d*n)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(dx+c\right)^3\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^n,x, algorithm="fricas")
```

```
[Out] integral((b*tan(d*x + c)^3)^n, x)
```

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

$$\int \left(b\tan\left(dx+c\right)^3\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c)^3)^n, x)
```

maple [F] time = 0.89, size = 0, normalized size = 0.00

$$\int \left(b\left(\tan^3(dx+c)\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^3)^n,x)
[Out] int((b*tan(d*x+c)^3)^n,x)
```

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

$$\int \left(b\tan(dx+c)^3\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^3)^n,x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^3)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(b\tan(c+d\,x)^3\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^3)^n,x)
[Out] int((b*tan(c + d*x)^3)^n, x)
```

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

$$\int \left(b\tan^3(c+dx)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**3)**n,x)
[Out] Integral((b*tan(c + d*x)**3)**n, x)
```

3.45 $\int \left(b\tan^4(c+dx)\right)^n\,dx$

Optimal. Leaf size=59

$$\frac{\tan(c+dx)\left(b\tan^4(c+dx)\right)^n\,{}_2F_1\left(1,\frac{1}{2}(4n+1);\frac{1}{2}(4n+3);-\tan^2(c+dx)\right)}{d(4n+1)}$$

```
[Out] hypergeom([1, 1/2+2*n],[3/2+2*n],-tan(d*x+c)^2)*tan(d*x+c)*(b*tan(d*x+c)^4)
^n/d/(1+4*n)
```

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3658, 3476, 364}

$$\frac{\tan(c+dx)\left(b\tan^4(c+dx)\right)^n\,{}_2F_1\left(1,\frac{1}{2}(4n+1);\frac{1}{2}(4n+3);-\tan^2(c+dx)\right)}{d(4n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^4)^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + 4*n)/2, (3 + 4*n)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]*(b*Tan[c + d*x]^4)^n)/(d*(1 + 4*n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3658

```
Int[(u_.)*((b_.)*tan[(e_.) + (f_.)*(x_)]^(n_))^(p_), x_Symbol] :> With[{ff
= FreeFactors[Tan[e + f*x], x]}, Dist[((b*ff^n)^IntPart[p]*(b*Tan[e + f*x]^
n)^FracPart[p])/(Tan[e + f*x]/ff)^(n*FracPart[p]), Int[ActivateTrig[u]*(Tan
[e + f*x]/ff)^(n*p), x], x]] /; FreeQ[{b, e, f, n, p}, x] &&  !IntegerQ[p]
&& IntegerQ[n] && (EqQ[u, 1] || MatchQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /;
```

```
FreeQ[{d, m}, x] && MemberQ[{sin, cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \left(b\tan^4(c+dx)\right)^n\,dx = \left(\tan^{-4n}(c+dx)\left(b\tan^4(c+dx)\right)^n\right)\int \tan^{4n}(c+dx)\,dx$$
$$= \frac{\left(\tan^{-4n}(c+dx)\left(b\tan^4(c+dx)\right)^n\right)\text{Subst}\left(\int \frac{x^{4n}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{{}_2F_1\left(1,\frac{1}{2}(1+4n);\frac{1}{2}(3+4n);-\tan^2(c+dx)\right)\tan(c+dx)\left(b\tan^4(c+dx)\right)^n}{d(1+4n)}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 0.90

$$\frac{\tan(c+dx)\left(b\tan^4(c+dx)\right)^n {}_2F_1\left(1,2n+\frac{1}{2};2n+\frac{3}{2};-\tan^2(c+dx)\right)}{4dn+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^4)^n,x]
[Out] (Hypergeometric2F1[1, 1/2 + 2*n, 3/2 + 2*n, -Tan[c + d*x]^2]*Tan[c + d*x]*(
b*Tan[c + d*x]^4)^n)/(d + 4*d*n)
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(dx+c\right)^4\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^n,x, algorithm="fricas")
[Out] integral((b*tan(d*x + c)^4)^n, x)
```

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

$$\int \left(b\tan\left(dx+c\right)^4\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(d*x + c)^4)^n, x)
```

maple [F] time = 0.58, size = 0, normalized size = 0.00

$$\int \left(b \left(\tan^4 \left(dx + c\right)\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^4)^n,x)
[Out] int((b*tan(d*x+c)^4)^n,x)
```

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

$$\int \left(b \tan \left(dx + c\right)^4\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)^4*b)^n,x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^4)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(b \tan \left(c + d\,x\right)^4\right)^n \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^4)^n,x)
[Out] int((b*tan(c + d*x)^4)^n, x)
```

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

$$\int \left(b \tan^4 \left(c + dx\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((tan(d*x+c)**4*b)**n,x)
[Out] Integral((b*tan(c + d*x)**4)**n, x)
```

3.46 $\int (b \tan^p(c+dx))^{5/2} \, dx$

Optimal. Leaf size=71

$$\frac{2b^2 \tan^{2p+1}(c+dx)\sqrt{b\tan^p(c+dx)}\ {}_2F_1\left(1,\frac{1}{4}(5p+2);\frac{1}{4}(5p+6);-\tan^2(c+dx)\right)}{d(5p+2)}$$

```
[Out] 2*b^2*hypergeom([1, 1/2+5/4*p],[3/2+5/4*p],-tan(d*x+c)^2)*(b*tan(d*x+c)^p)^
(1/2)*tan(d*x+c)^(1+2*p)/d/(2+5*p)
```

Rubi [A] time = 0.05, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3659, 3476, 364}

$$\frac{2b^2 \tan^{2p+1}(c+dx)\sqrt{b\tan^p(c+dx)}\ {}_2F_1\left(1,\frac{1}{4}(5p+2);\frac{1}{4}(5p+6);-\tan^2(c+dx)\right)}{d(5p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^p)^(5/2),x]
```

```
[Out] (2*b^2*Hypergeometric2F1[1, (2 + 5*p)/4, (6 + 5*p)/4, -Tan[c + d*x]^2]*Tan[
c + d*x]^(1 + 2*p)*Sqrt[b*Tan[c + d*x]^p])/(d*(2 + 5*p))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] &&  !IntegerQ[p] &&  !IntegerQ[n] && (EqQ[u, 1] || Mat
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
```

```
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int (b\tan^p(c+dx))^{5/2}\,dx &= \left(b^2\tan^{-\frac{p}{2}}(c+dx)\sqrt{b\tan^p(c+dx)}\right)\int \tan^{\frac{5p}{2}}(c+dx)\,dx\\ &= \frac{\left(b^2\tan^{-\frac{p}{2}}(c+dx)\sqrt{b\tan^p(c+dx)}\right)\text{Subst}\left(\int \frac{x^{5p/2}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}\\ &= \frac{2b^2\,{}_2F_1\left(1,\frac{1}{4}(2+5p);\frac{1}{4}(6+5p);-\tan^2(c+dx)\right)\tan^{1+2p}(c+dx)\sqrt{b\tan^p(c+dx)}}{d(2+5p)}\end{aligned}$$

Mathematica [A] time = 0.11, size = 62, normalized size = 0.87

$$\frac{2\tan(c+dx)\,(b\tan^p(c+dx))^{5/2}\;{}_2F_1\left(1,\frac{1}{4}(5p+2);\frac{1}{4}(5p+6);-\tan^2(c+dx)\right)}{d(5p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^p)^(5/2),x]
```

```
[Out] (2*Hypergeometric2F1[1, (2 + 5*p)/4, (6 + 5*p)/4, -Tan[c + d*x]^2]*Tan[c +
d*x]*(b*Tan[c + d*x]^p)^(5/2))/(d*(2 + 5*p))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 3.41, size = 0, normalized size = 0.00

$$\int (b(\tan^{p}(dx+c)))^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^p)^(5/2),x)
[Out] int((b*tan(d*x+c)^p)^(5/2),x)
```

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

$$\int \left(b\tan(dx+c)^{p}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(5/2),x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^p)^(5/2), x)
```

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

$$\int \left(b\tan(c+d\,x)^{p}\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^p)^(5/2),x)
[Out] int((b*tan(c + d*x)^p)^(5/2), x)
```

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

$$\int (b\tan^{p}(c+dx))^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**p)**(5/2),x)
[Out] Integral((b*tan(c + d*x)**p)**(5/2), x)
```

3.47 $\int (b\tan^p(c+dx))^{3/2}\,dx$

Optimal. Leaf size=65

$$\frac{2b\tan^{p+1}(c+dx)\sqrt{b\tan^p(c+dx)}\ {}_2F_1\left(1,\frac{1}{4}(3p+2);\frac{3(p+2)}{4};-\tan^2(c+dx)\right)}{d(3p+2)}$$

```
[Out] 2*b*hypergeom([1, 1/2+3/4*p],[3/2+3/4*p],-tan(d*x+c)^2)*(b*tan(d*x+c)^p)^(1
/2)*tan(d*x+c)^(1+p)/d/(2+3*p)
```

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3659, 3476, 364}

$$\frac{2b\tan^{p+1}(c+dx)\sqrt{b\tan^p(c+dx)}\ {}_2F_1\left(1,\frac{1}{4}(3p+2);\frac{3(p+2)}{4};-\tan^2(c+dx)\right)}{d(3p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^p)^(3/2),x]
```

```
[Out] (2*b*Hypergeometric2F1[1, (2 + 3*p)/4, (3*(2 + p))/4, -Tan[c + d*x]^2]*Tan[
c + d*x]^(1 + p)*Sqrt[b*Tan[c + d*x]^p])/(d*(2 + 3*p))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] &&  !IntegerQ[p] &&  !IntegerQ[n] && (EqQ[u, 1] || Mat
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
```

```
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int (b\tan^p(c+dx))^{3/2}\,dx = \left(b\tan^{-\frac{p}{2}}(c+dx)\sqrt{b\tan^p(c+dx)}\right)\int \tan^{\frac{3p}{2}}(c+dx)\,dx$$
$$= \frac{\left(b\tan^{-\frac{p}{2}}(c+dx)\sqrt{b\tan^p(c+dx)}\right)\text{Subst}\left(\int \frac{x^{3p/2}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{2b\,{}_2F_1\left(1,\frac{1}{4}(2+3p);\frac{3(2+p)}{4};-\tan^2(c+dx)\right)\tan^{1+p}(c+dx)\sqrt{b\tan^p(c+dx)}}{d(2+3p)}$$

Mathematica [A] time = 0.07, size = 60, normalized size = 0.92

$$\frac{2\tan(c+dx)\,(b\tan^p(c+dx))^{3/2}\,{}_2F_1\left(1,\frac{1}{4}(3p+2);\frac{3(p+2)}{4};-\tan^2(c+dx)\right)}{d(3p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^p)^(3/2),x]
```

```
[Out] (2*Hypergeometric2F1[1, (2 + 3*p)/4, (3*(2 + p))/4, -Tan[c + d*x]^2]*Tan[c
+ d*x]*(b*Tan[c + d*x]^p)^(3/2))/(d*(2 + 3*p))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.73, size = 0, normalized size = 0.00

$$\int (b (\tan^p (dx + c)))^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^p)^(3/2),x)
```

```
[Out] int((b*tan(d*x+c)^p)^(3/2),x)
```

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

$$\int \left(b \tan (dx + c)^p\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(d*x + c)^p)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(b \tan (c + d\,x)^p\right)^{3/2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^p)^(3/2),x)
```

```
[Out] int((b*tan(c + d*x)^p)^(3/2), x)
```

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

$$\int (b \tan^p (c + dx))^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**p)**(3/2),x)
```

```
[Out] Integral((b*tan(c + d*x)**p)**(3/2), x)
```

3.48 $\int \sqrt{b \tan^p(c+dx)}\, dx$

Optimal. Leaf size=56

$$\frac{2\tan(c+dx)\sqrt{b\tan^p(c+dx)}\ {}_2F_1\left(1,\frac{p+2}{4};\frac{p+6}{4};-\tan^2(c+dx)\right)}{d(p+2)}$$

```
[Out] 2*hypergeom([1, 1/2+1/4*p],[3/2+1/4*p],-tan(d*x+c)^2)*(b*tan(d*x+c)^p)^(1/2
)*tan(d*x+c)/d/(2+p)
```

Rubi [A] time = 0.04, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3659, 3476, 364}

$$\frac{2\tan(c+dx)\sqrt{b\tan^p(c+dx)}\ {}_2F_1\left(1,\frac{p+2}{4};\frac{p+6}{4};-\tan^2(c+dx)\right)}{d(p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[c + d*x]^p],x]
```

```
[Out] (2*Hypergeometric2F1[1, (2 + p)/4, (6 + p)/4, -Tan[c + d*x]^2]*Tan[c + d*x]
*Sqrt[b*Tan[c + d*x]^p])/(d*(2 + p))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] &&  !IntegerQ[p] &&  !IntegerQ[n] && (EqQ[u, 1] || Mat
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
```

```
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \sqrt{b\tan^p(c+dx)}\,dx = \left(\tan^{-\frac{p}{2}}(c+dx)\sqrt{b\tan^p(c+dx)}\right)\int \tan^{\frac{p}{2}}(c+dx)\,dx$$
$$= \frac{\left(\tan^{-\frac{p}{2}}(c+dx)\sqrt{b\tan^p(c+dx)}\right)\mathrm{Subst}\left(\int \frac{x^{p/2}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d}$$
$$= \frac{2\,{}_2F_1\left(1,\frac{2+p}{4};\frac{6+p}{4};-\tan^2(c+dx)\right)\tan(c+dx)\sqrt{b\tan^p(c+dx)}}{d(2+p)}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 1.00

$$\frac{2\tan(c+dx)\sqrt{b\tan^p(c+dx)}\;{}_2F_1\left(1,\frac{p+2}{4};\frac{p+6}{4};-\tan^2(c+dx)\right)}{d(p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[c + d*x]^p],x]
```

```
[Out] (2*Hypergeometric2F1[1, (2 + p)/4, (6 + p)/4, -Tan[c + d*x]^2]*Tan[c + d*x]
*Sqrt[b*Tan[c + d*x]^p])/(d*(2 + p))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int \sqrt{b\tan\left(dx+c\right)^p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*tan(d*x + c)^p), x)
```

maple [F] time = 0.71, size = 0, normalized size = 0.00

$$\int \sqrt{b\left(\tan^{p}\left(dx+c\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^p)^(1/2),x)
[Out] int((b*tan(d*x+c)^p)^(1/2),x)
```

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

$$\int \sqrt{b\tan\left(dx+c\right)^{p}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*tan(d*x + c)^p), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{b\,{\tan\left(c+d\,x\right)}^p}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^p)^(1/2),x)
[Out] int((b*tan(c + d*x)^p)^(1/2), x)
```

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

$$\int \sqrt{b\tan^{p}{\left(c+dx\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**p)**(1/2),x)
[Out] Integral(sqrt(b*tan(c + d*x)**p), x)
```

3.49 $\int \frac{1}{\sqrt{b\tan^p(c+dx)}}\,dx$

Optimal. Leaf size=62

$$\frac{2\tan(c+dx)\,{}_2F_1\left(1,\frac{2-p}{4};\frac{6-p}{4};-\tan^2(c+dx)\right)}{d(2-p)\sqrt{b\tan^p(c+dx)}}$$

```
[Out] 2*hypergeom([1, 1/2-1/4*p],[3/2-1/4*p],-tan(d*x+c)^2)*tan(d*x+c)/d/(2-p)/(b
*tan(d*x+c)^p)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3659, 3476, 364}

$$\frac{2\tan(c+dx)\,{}_2F_1\left(1,\frac{2-p}{4};\frac{6-p}{4};-\tan^2(c+dx)\right)}{d(2-p)\sqrt{b\tan^p(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[b*Tan[c + d*x]^p],x]
```

```
[Out] (2*Hypergeometric2F1[1, (2 - p)/4, (6 - p)/4, -Tan[c + d*x]^2]*Tan[c + d*x]
)/(d*(2 - p)*Sqrt[b*Tan[c + d*x]^p])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] && !IntegerQ[p] && !IntegerQ[n] && (EqQ[u, 1] || Mat
```

```
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{b\tan^p(c+dx)}}\,dx &= \frac{\tan^{\frac{p}{2}}(c+dx)\int \tan^{-\frac{p}{2}}(c+dx)\,dx}{\sqrt{b\tan^p(c+dx)}}\\ &= \frac{\tan^{\frac{p}{2}}(c+dx)\,\mathrm{Subst}\left(\int \frac{x^{-p/2}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{d\sqrt{b\tan^p(c+dx)}}\\ &= \frac{2\,{}_2F_1\left(1,\frac{2-p}{4};\frac{6-p}{4};-\tan^2(c+dx)\right)\tan(c+dx)}{d(2-p)\sqrt{b\tan^p(c+dx)}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 60, normalized size = 0.97

$$-\frac{2\tan(c+dx)\,{}_2F_1\left(1,\frac{2-p}{4};\frac{6-p}{4};-\tan^2(c+dx)\right)}{d(p-2)\sqrt{b\tan^p(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[b*Tan[c + d*x]^p],x]
```

```
[Out] (-2*Hypergeometric2F1[1, (2 - p)/4, (6 - p)/4, -Tan[c + d*x]^2]*Tan[c + d*x
])/(d*(-2 + p)*Sqrt[b*Tan[c + d*x]^p])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int \frac{1}{\sqrt{b\tan\left(dx+c\right)^{p}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(1/2),x, algorithm="giac")
[Out] integrate(1/sqrt(b*tan(d*x + c)^p), x)
```

maple [F] time = 0.60, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b\left(\tan^{p}\left(dx+c\right)\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^p)^(1/2),x)
[Out] int(1/(b*tan(d*x+c)^p)^(1/2),x)
```

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

$$\int \frac{1}{\sqrt{b\tan\left(dx+c\right)^{p}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(1/2),x, algorithm="maxima")
[Out] integrate(1/sqrt(b*tan(d*x + c)^p), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\sqrt{b\tan\left(c+d\,x\right)^{p}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^p)^(1/2),x)
[Out] int(1/(b*tan(c + d*x)^p)^(1/2), x)
```

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

$$\int \frac{1}{\sqrt{b\tan^{p}\left(c+dx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**p)**(1/2),x)
[Out] Integral(1/sqrt(b*tan(c + d*x)**p), x)
```

3.50 $\int \frac{1}{(b\tan^p(c+dx))^{3/2}}\,dx$

Optimal. Leaf size=71

$$\frac{2\tan^{1-p}(c+dx)\,{}_2F_1\left(1,\frac{1}{4}(2-3p);\frac{3(2-p)}{4};-\tan^2(c+dx)\right)}{bd(2-3p)\sqrt{b\tan^p(c+dx)}}$$

```
[Out] 2*hypergeom([1, 1/2-3/4*p],[3/2-3/4*p],-tan(d*x+c)^2)*tan(d*x+c)^(1-p)/b/d/
(2-3*p)/(b*tan(d*x+c)^p)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3659, 3476, 364}

$$\frac{2\tan^{1-p}(c+dx)\,{}_2F_1\left(1,\frac{1}{4}(2-3p);\frac{3(2-p)}{4};-\tan^2(c+dx)\right)}{bd(2-3p)\sqrt{b\tan^p(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^p)^(-3/2),x]
```

```
[Out] (2*Hypergeometric2F1[1, (2 - 3*p)/4, (3*(2 - p))/4, -Tan[c + d*x]^2]*Tan[c
+ d*x]^(1 - p))/(b*d*(2 - 3*p)*Sqrt[b*Tan[c + d*x]^p])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] &&  !IntegerQ[p] &&  !IntegerQ[n] && (EqQ[u, 1] || Mat
```

```
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \frac{1}{(b\tan^p(c+dx))^{3/2}}\,dx = \frac{\tan^{\frac{p}{2}}(c+dx)\int \tan^{-\frac{3p}{2}}(c+dx)\,dx}{b\sqrt{b\tan^p(c+dx)}}$$

$$= \frac{\tan^{\frac{p}{2}}(c+dx)\,\text{Subst}\left(\int \frac{x^{-3p/2}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{bd\sqrt{b\tan^p(c+dx)}}$$

$$= \frac{2\,{}_2F_1\left(1, \frac{1}{4}(2-3p); \frac{3(2-p)}{4}; -\tan^2(c+dx)\right)\tan^{1-p}(c+dx)}{bd(2-3p)\sqrt{b\tan^p(c+dx)}}$$

Mathematica [A] time = 0.07, size = 60, normalized size = 0.85

$$-\frac{2\tan(c+dx)\,{}_2F_1\left(1, \frac{1}{4}(2-3p); -\frac{3}{4}(p-2); -\tan^2(c+dx)\right)}{d(3p-2)\,(b\tan^p(c+dx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^p)^(-3/2),x]
```

```
[Out] (-2*Hypergeometric2F1[1, (2 - 3*p)/4, (-3*(-2 + p))/4, -Tan[c + d*x]^2]*Tan
[c + d*x])/(d*(-2 + 3*p)*(b*Tan[c + d*x]^p)^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int \frac{1}{\left(b\tan(dx+c)^p\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(3/2),x, algorithm="giac")
[Out] integrate((b*tan(d*x + c)^p)^(-3/2), x)
```

maple [F] time = 0.75, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\left(\tan^{p}\left(dx+c\right)\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^p)^(3/2),x)
[Out] int(1/(b*tan(d*x+c)^p)^(3/2),x)
```

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

$$\int \frac{1}{\left(b\tan\left(dx+c\right)^{p}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(3/2),x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^p)^(-3/2), x)
```

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

$$\int \frac{1}{\left(b\tan\left(c+d\,x\right)^{p}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^p)^(3/2),x)
[Out] int(1/(b*tan(c + d*x)^p)^(3/2), x)
```

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

$$\int \frac{1}{\left(b\tan^{p}\left(c+dx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**p)**(3/2),x)
[Out] Integral((b*tan(c + d*x)**p)**(-3/2), x)
```

3.51 $\int \frac{1}{(b\tan^p(c+dx))^{5/2}}\,dx$

Optimal. Leaf size=71

$$\frac{2\tan^{1-2p}(c+dx)\,{}_2F_1\left(1,\frac{1}{4}(2-5p);\frac{1}{4}(6-5p);-\tan^2(c+dx)\right)}{b^2d(2-5p)\sqrt{b\tan^p(c+dx)}}$$

[Out] 2*hypergeom([1, 1/2-5/4*p],[3/2-5/4*p],-tan(d*x+c)^2)*tan(d*x+c)^(1-2*p)/b^2/d/(2-5*p)/(b*tan(d*x+c)^p)^(1/2)

Rubi [A] time = 0.05, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3659, 3476, 364}

$$\frac{2\tan^{1-2p}(c+dx)\,{}_2F_1\left(1,\frac{1}{4}(2-5p);\frac{1}{4}(6-5p);-\tan^2(c+dx)\right)}{b^2d(2-5p)\sqrt{b\tan^p(c+dx)}}$$

Antiderivative was successfully verified.

[In] Int[(b*Tan[c + d*x]^p)^(-5/2),x]

[Out] (2*Hypergeometric2F1[1, (2 - 5*p)/4, (6 - 5*p)/4, -Tan[c + d*x]^2]*Tan[c + d*x]^(1 - 2*p))/(b^2*d*(2 - 5*p)*Sqrt[b*Tan[c + d*x]^p])

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILtQ[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> Dist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*FracPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b, c, e, f, n, p}, x] &&  !IntegerQ[p] &&  !IntegerQ[n] && (EqQ[u, 1] || Mat
```

```
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\int \frac{1}{(b\tan^p(c+dx))^{5/2}}\,dx = \frac{\tan^{\frac{p}{2}}(c+dx)\int \tan^{-\frac{5p}{2}}(c+dx)\,dx}{b^2\sqrt{b\tan^p(c+dx)}}$$
$$= \frac{\tan^{\frac{p}{2}}(c+dx)\,\text{Subst}\left(\int \frac{x^{-5p/2}}{1+x^2}\,dx, x, \tan(c+dx)\right)}{b^2 d\sqrt{b\tan^p(c+dx)}}$$
$$= \frac{2\,{}_2F_1\left(1,\frac{1}{4}(2-5p);\frac{1}{4}(6-5p);-\tan^2(c+dx)\right)\tan^{1-2p}(c+dx)}{b^2 d(2-5p)\sqrt{b\tan^p(c+dx)}}$$

Mathematica [A] time = 0.07, size = 62, normalized size = 0.87

$$-\frac{2\tan(c+dx)\,{}_2F_1\left(1,\frac{1}{4}(2-5p);\frac{1}{4}(6-5p);-\tan^2(c+dx)\right)}{d(5p-2)\,(b\tan^p(c+dx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^p)^(-5/2),x]
```

```
[Out] (-2*Hypergeometric2F1[1, (2 - 5*p)/4, (6 - 5*p)/4, -Tan[c + d*x]^2]*Tan[c +
 d*x])/(d*(-2 + 5*p)*(b*Tan[c + d*x]^p)^(5/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int \frac{1}{\left(b\tan\left(dx+c\right)^{p}\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(5/2),x, algorithm="giac")
[Out] integrate((b*tan(d*x + c)^p)^(-5/2), x)
```

maple [F] time = 0.77, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b \left(\tan^{p}\left(dx+c\right)\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(d*x+c)^p)^(5/2),x)
[Out] int(1/(b*tan(d*x+c)^p)^(5/2),x)
```

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

$$\int \frac{1}{\left(b \tan\left(dx+c\right)^{p}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)^p)^(5/2),x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^p)^(-5/2), x)
```

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

$$\int \frac{1}{{\left(b\,{\mathrm{tan}\left(c+d\,x\right)}^p\right)}^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*tan(c + d*x)^p)^(5/2),x)
[Out] int(1/(b*tan(c + d*x)^p)^(5/2), x)
```

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

$$\int \frac{1}{\left(b \tan^{p}{\left(c+dx \right)}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*tan(d*x+c)**p)**(5/2),x)
[Out] Integral((b*tan(c + d*x)**p)**(-5/2), x)
```

3.52 $\int (b\tan^p(c+dx))^{\frac{1}{p}}\,dx$

Optimal. Leaf size=32

$$-\frac{\cot(c+dx)\log(\cos(c+dx))\,(b\tan^p(c+dx))^{\frac{1}{p}}}{d}$$

```
[Out] -cot(d*x+c)*ln(cos(d*x+c))*(b*tan(d*x+c)^p)^(1/p)/d
```

Rubi [A] time = 0.02, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3659, 3475}

$$-\frac{\cot(c+dx)\log(\cos(c+dx))\,(b\tan^p(c+dx))^{\frac{1}{p}}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[c + d*x]^p)^p^(-1),x]
```

```
[Out] -((Cot[c + d*x]*Log[Cos[c + d*x]]*(b*Tan[c + d*x]^p)^p^(-1))/d)
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] &&  !IntegerQ[p] &&  !IntegerQ[n] && (EqQ[u, 1] || Mat
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int (b\tan^p(c+dx))^{\frac{1}{p}}\,dx &= \left(\cot(c+dx)\,(b\tan^p(c+dx))^{\frac{1}{p}}\right)\int \tan(c+dx)\,dx\\ &= -\frac{\cot(c+dx)\log(\cos(c+dx))\,(b\tan^p(c+dx))^{\frac{1}{p}}}{d}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 1.00

$$-\frac{\cot(c+dx)\log(\cos(c+dx))\left(b\tan^p(c+dx)\right)^{\frac{1}{p}}}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[c + d*x]^p)^p^(-1),x]
```

```
[Out] -((Cot[c + d*x]*Log[Cos[c + d*x]]*(b*Tan[c + d*x]^p)^p^(-1))/d)
```

fricas [A] time = 2.39, size = 23, normalized size = 0.72

$$-\frac{b^{\left(\frac{1}{p}\right)}\log\left(\frac{1}{\tan(dx+c)^2+1}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(1/p),x, algorithm="fricas")
```

```
[Out] -1/2*b^(1/p)*log(1/(tan(d*x + c)^2 + 1))/d
```

giac [B] time = 9.82, size = 152, normalized size = 4.75

$$\frac{4\,\pi|b|^{\left(\frac{1}{p}\right)}\left\lfloor\frac{dx+c}{\pi}+\frac{1}{2}\right\rfloor\tan\left(\frac{\pi\mathrm{sgn}(b)}{4\,p}-\frac{\pi}{4\,p}\right)+|b|^{\left(\frac{1}{p}\right)}\log\left(\frac{4}{\tan(dx+c)^2+1}\right)\tan\left(\frac{\pi\mathrm{sgn}(b)}{4\,p}-\frac{\pi}{4\,p}\right)^2-4\,c|b|^{\left(\frac{1}{p}\right)}\tan\left(\frac{\pi\mathrm{sgn}(b)}{4\,p}-\frac{\pi}{4\,p}\right)-}{2\left(d\tan\left(\frac{\pi\mathrm{sgn}(b)}{4\,p}-\frac{\pi}{4\,p}\right)^2+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(1/p),x, algorithm="giac")
```

```
[Out] 1/2*(4*pi*abs(b)^(1/p)*floor((d*x + c)/pi + 1/2)*tan(1/4*pi*sgn(b)/p - 1/4*
pi/p) + abs(b)^(1/p)*log(4/(tan(d*x + c)^2 + 1))*tan(1/4*pi*sgn(b)/p - 1/4*
pi/p)^2 - 4*c*abs(b)^(1/p)*tan(1/4*pi*sgn(b)/p - 1/4*pi/p) - abs(b)^(1/p)*l
og(4/(tan(d*x + c)^2 + 1)))/(d*tan(1/4*pi*sgn(b)/p - 1/4*pi/p)^2 + d)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int\left(b\left(\tan^p(dx+c)\right)\right)^{\frac{1}{p}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(d*x+c)^p)^(1/p),x)
```

```
[Out] int((b*tan(d*x+c)^p)^(1/p),x)
```

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

$$\int \left(b\tan\left(dx+c\right)^{p}\right)^{\left(\frac{1}{p}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)^p)^(1/p),x, algorithm="maxima")
[Out] integrate((b*tan(d*x + c)^p)^(1/p), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \left(b\tan\left(c+d\,x\right)^{p}\right)^{1/p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(c + d*x)^p)^(1/p),x)
[Out] int((b*tan(c + d*x)^p)^(1/p), x)
```

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

$$\int \left(b\tan^{p}\left(c+dx\right)\right)^{\frac{1}{p}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(d*x+c)**p)**(1/p),x)
[Out] Integral((b*tan(c + d*x)**p)**(1/p), x)
```

3.53 $\int (a(b\tan(c+dx))^p)^n \, dx$

Optimal. Leaf size=61

$$\frac{\tan(c+dx)\,{}_2F_1\left(1,\frac{1}{2}(np+1);\frac{1}{2}(np+3);-\tan^2(c+dx)\right)(a(b\tan(c+dx))^p)^n}{d(np+1)}$$

```
[Out] hypergeom([1, 1/2*n*p+1/2],[1/2*n*p+3/2],-tan(d*x+c)^2)*tan(d*x+c)*(a*(b*ta
n(d*x+c))^p)^n/d/(n*p+1)
```

Rubi [A] time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3659, 3476, 364}

$$\frac{\tan(c+dx)\,{}_2F_1\left(1,\frac{1}{2}(np+1);\frac{1}{2}(np+3);-\tan^2(c+dx)\right)(a(b\tan(c+dx))^p)^n}{d(np+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*(b*Tan[c + d*x])^p)^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + n*p)/2, (3 + n*p)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]*(a*(b*Tan[c + d*x])^p)^n)/(d*(1 + n*p))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rule 3659

```
Int[(u_.)*((b_.)*((c_.)*tan[(e_.) + (f_.)*(x_)])^(n_))^(p_), x_Symbol] :> D
ist[(b^IntPart[p]*(b*(c*Tan[e + f*x])^n)^FracPart[p])/(c*Tan[e + f*x])^(n*F
racPart[p]), Int[ActivateTrig[u]*(c*Tan[e + f*x])^(n*p), x], x] /; FreeQ[{b
, c, e, f, n, p}, x] &&  !IntegerQ[p] &&  !IntegerQ[n] && (EqQ[u, 1] || Mat
chQ[u, ((d_.)*(trig_)[e + f*x])^(m_.) /; FreeQ[{d, m}, x] && MemberQ[{sin,
```

```
cos, tan, cot, sec, csc}, trig]])
```

Rubi steps

$$\begin{aligned}\int (a(b\tan(c+dx))^p)^n\,dx &= \left((b\tan(c+dx))^{-np}\,(a(b\tan(c+dx))^p)^n\right)\int (b\tan(c+dx))^{np}\,dx\\ &= \frac{\left(b(b\tan(c+dx))^{-np}\,(a(b\tan(c+dx))^p)^n\right)\operatorname{Subst}\left(\int \frac{x^{np}}{b^2+x^2}\,dx,x,b\tan(c+dx)\right)}{d}\\ &= \frac{{}_2F_1\left(1,\frac{1}{2}(1+np);\frac{1}{2}(3+np);-\tan^2(c+dx)\right)\tan(c+dx)\,(a(b\tan(c+dx))^p)^n}{d(1+np)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 59, normalized size = 0.97

$$\frac{\tan(c+dx)\,{}_2F_1\left(1,\frac{1}{2}(np+1);\frac{1}{2}(np+3);-\tan^2(c+dx)\right)(a(b\tan(c+dx))^p)^n}{dnp+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*(b*Tan[c + d*x])^p)^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + n*p)/2, (3 + n*p)/2, -Tan[c + d*x]^2]*Tan[c + d*
x]*(a*(b*Tan[c + d*x])^p)^n)/(d + d*n*p)
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\left((b\tan(dx+c))^p\,a\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*(b*tan(d*x+c))^p)^n,x, algorithm="fricas")
```

```
[Out] integral(((b*tan(d*x + c))^p*a)^n, x)
```

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

$$\int \left((b\tan(dx+c))^p\,a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*(b*tan(d*x+c))^p)^n,x, algorithm="giac")
```

```
[Out] integrate(((b*tan(d*x + c))^p*a)^n, x)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \left(a\left(b\tan\left(dx+c\right)\right)^{p}\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*(b*tan(d*x+c))^p)^n,x)
[Out] int((a*(b*tan(d*x+c))^p)^n,x)
```

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

$$\int \left(\left(b\tan\left(dx+c\right)\right)^{p}a\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*(b*tan(d*x+c))^p)^n,x, algorithm="maxima")
[Out] integrate(((b*tan(d*x + c))^p*a)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(a\left(b\tan\left(c+d\,x\right)\right)^{p}\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*(b*tan(c + d*x))^p)^n,x)
[Out] int((a*(b*tan(c + d*x))^p)^n, x)
```

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

$$\int \left(a\left(b\tan\left(c+dx\right)\right)^{p}\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*(b*tan(d*x+c))**p)**n,x)
[Out] Integral((a*(b*tan(c + d*x))**p)**n, x)
```

3.54 $\int \sin^4(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=257

$$-\frac{\cos^4(a+bx)(d\tan(a+bx))^{7/2}}{4bd^3}-\frac{21\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b}+\frac{21\sqrt{d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b}+\frac{21\sqrt{d}\log}{}$$

```
[Out] -21/64*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))*d^(1/2)/b*2^(1/2)+21/
64*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))*d^(1/2)/b*2^(1/2)+21/128*
ln(d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))*d^(1/2)/b*2^(1/
2)-21/128*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))*d^(1/
2)/b*2^(1/2)-7/16*cos(b*x+a)^2*(d*tan(b*x+a))^(3/2)/b/d-1/4*cos(b*x+a)^4*(d
*tan(b*x+a))^(7/2)/b/d^3
```

Rubi [A] time = 0.20, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2591, 288, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\cos^4(a+bx)(d\tan(a+bx))^{7/2}}{4bd^3}-\frac{21\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b}+\frac{21\sqrt{d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b}+\frac{21\sqrt{d}\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^4*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-21*Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2
]*b) + (21*Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*
Sqrt[2]*b) + (21*Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[
d*Tan[a + b*x]]])/(64*Sqrt[2]*b) - (21*Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[a
+ b*x] + Sqrt[2]*Sqrt[d*Tan[a + b*x]]])/(64*Sqrt[2]*b) - (7*Cos[a + b*x]^2*
(d*Tan[a + b*x])^(3/2))/(16*b*d) - (Cos[a + b*x]^4*(d*Tan[a + b*x])^(7/2))/
(4*b*d^3)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
```

```
/; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^4(a+bx)\sqrt{d\tan(a+bx)}\,dx = \frac{d\,\text{Subst}\left(\int \frac{x^{9/2}}{\left(d^2+x^2\right)^3}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^4(a+bx)(d\tan(a+bx))^{7/2}}{4bd^3} + \frac{(7d)\,\text{Subst}\left(\int \frac{x^{5/2}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx\right.}{8b}$$

$$= -\frac{7\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{7/2}}{4bd^3} + \frac{(21d)}{}$$

$$= -\frac{7\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{7/2}}{4bd^3} + \frac{(21d)}{}$$

$$= -\frac{7\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{7/2}}{4bd^3} - \frac{(21d)}{}$$

$$= -\frac{7\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{7/2}}{4bd^3} + \frac{(21\sqrt{}}{}$$

$$= \frac{21\sqrt{d}\,\log\left(\sqrt{d}+\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{64\sqrt{2}\,b} - \frac{21\sqrt{d}\,\log\left(\sqrt{d}\right.}{}$$

$$= -\frac{21\sqrt{d}\,\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b} + \frac{21\sqrt{d}\,\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b} + \frac{21}{}$$

Mathematica [A] time = 0.24, size = 122, normalized size = 0.47

$$-\frac{\sqrt{d\tan(a+bx)}\left(18\sin(2(a+bx))-2\sin(4(a+bx))+21\sqrt{\sin(2(a+bx))}\csc(a+bx)\sin^{-1}(\cos(a+bx)-\sin\right.}{64b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^4*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] -1/64*((21*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Csc[a + b*x]*Sqrt[Sin[2*(a +
 b*x)]] + 21*Csc[a + b*x]*Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a +
 b*x)]]]*Sqrt[Sin[2*(a + b*x)]] + 18*Sin[2*(a + b*x)] - 2*Sin[4*(a + b*x)])
*Sqrt[d*Tan[a + b*x]])/b
```

fricas [B] time = 168.98, size = 1916, normalized size = 7.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/512*(84*sqrt(2)*b*(d^2/b^4)^(1/4)*arctan((sqrt(4*b^2*d^3*sqrt(d^2/b^4)*co
s(b*x + a)*sin(b*x + a) + d^4 - 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x
+ a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*si
n(b*x + a)/cos(b*x + a)))*(2*d^2*cos(b*x + a)*sin(b*x + a) + b^2*d*sqrt(d^2
/b^4) + (sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d*(d^2/b^4)
^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) + (sqr
t(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2
/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*d^4*cos(b
*x + a)^2 - d^4)) + 84*sqrt(2)*b*(d^2/b^4)^(1/4)*arctan(-(sqrt(4*b^2*d^3*sq
rt(d^2/b^4)*cos(b*x + a)*sin(b*x + a) + d^4 + 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^
(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a
)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(2*d^2*cos(b*x + a)*sin(b*x + a) +
b^2*d*sqrt(d^2/b^4) - (sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a)^2 + sqrt(2)
*b*d*(d^2/b^4)^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x
 + a))) - (sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt
(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))
)/(2*d^4*cos(b*x + a)^2 - d^4)) + 84*sqrt(2)*b*(d^2/b^4)^(1/4)*arctan(-1/2*
(2*d^4*sin(b*x + a) - sqrt(4*b^2*d^3*sqrt(d^2/b^4)*cos(b*x + a)*sin(b*x + a
) + d^4 + 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sq
rt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a
)))*(sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(d^2/b^4)^(1/4)
*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (sqrt(2)*b^3*d^2*(d^2/b^
4)^(3/4)*cos(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*sin(b*x + a))*sqrt(d*
sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^3*cos(b*x + a)^3 - b^2*d^3*cos(b*x +
a))*sqrt(d^2/b^4))/((2*d^4*cos(b*x + a)^2 - d^4)*sin(b*x + a))) + 84*sqrt(2
)*b*(d^2/b^4)^(1/4)*arctan(1/2*(2*d^4*sin(b*x + a) + sqrt(4*b^2*d^3*sqrt(d^
2/b^4)*cos(b*x + a)*sin(b*x + a) + d^4 - 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)
*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*
sqrt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a
) + sqrt(2)*b*d*(d^2/b^4)^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x +
 a)) - (sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a) + sqrt(2)*b*d^3*(d^2/b
```

```
^4)^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^3*cos(
b*x + a)^3 - b^2*d^3*cos(b*x + a))*sqrt(d^2/b^4))/((2*d^4*cos(b*x + a)^2 -
d^4)*sin(b*x + a))) - 21*sqrt(2)*b*(d^2/b^4)^(1/4)*log(343064484*b^2*d^3*sq
rt(d^2/b^4)*cos(b*x + a)*sin(b*x + a) + 85766121*d^4 + 171532242*(sqrt(2)*b
^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^
(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) + 21*sqrt(2)*b*(d^
2/b^4)^(1/4)*log(343064484*b^2*d^3*sqrt(d^2/b^4)*cos(b*x + a)*sin(b*x + a)
+ 85766121*d^4 - 171532242*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*si
n(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x +
 a)/cos(b*x + a))) - 21*sqrt(2)*b*(d^2/b^4)^(1/4)*log(85766121/4*b^2*d^3*sq
rt(d^2/b^4)*cos(b*x + a)*sin(b*x + a) + 85766121/16*d^4 + 85766121/8*(sqrt(
2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b
^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) + 21*sqrt(2)*b
*(d^2/b^4)^(1/4)*log(85766121/4*b^2*d^3*sqrt(d^2/b^4)*cos(b*x + a)*sin(b*x
+ a) + 85766121/16*d^4 - 85766121/8*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*
x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*
sin(b*x + a)/cos(b*x + a))) + 32*(4*cos(b*x + a)^3 - 11*cos(b*x + a))*sqrt(
d*sin(b*x + a)/cos(b*x + a))*sin(b*x + a))/b
```

giac [A] time = 1.41, size = 245, normalized size = 0.95

$$\frac{\frac{42\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{b}+\frac{42\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{b}-\frac{21\sqrt{2}|d|^{\frac{3}{2}}\log\left(d\tan(bx+a)+\sqrt{2}\sqrt{d\tan(bx+a)}\right.}{b}}{128\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] 1/128*(42*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2
*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b + 42*sqrt(2)*abs(d)^(3/2)*arctan(-1/
2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b -
 21*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x + a))*
sqrt(abs(d)) + abs(d))/b + 21*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) - sqr
t(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/b - 8*(11*sqrt(d*tan(b*x +
 a))*d^5*tan(b*x + a)^3 + 7*sqrt(d*tan(b*x + a))*d^5*tan(b*x + a))/((d^2*ta
n(b*x + a)^2 + d^2)^2*b))/d
```

maple [C] time = 0.59, size = 542, normalized size = 2.11

$$\frac{(-1+\cos(bx+a))\left(21i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^4*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] 1/64/b*(-1+cos(b*x+a))*(21*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)-21*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1
/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*
x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+8*cos(
b*x+a)^4*2^(1/2)-8*cos(b*x+a)^3*2^(1/2)+21*EllipticPi(((1-cos(b*x+a)+sin(b*
x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))
^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2)+21*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b
*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2)-22*cos(b*x+a)^2*2^(1/2)+22*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2*(d*si
n(b*x+a)/cos(b*x+a))^(1/2)/sin(b*x+a)^3*2^(1/2)
```

maxima [A] time = 0.76, size = 225, normalized size = 0.88

$$\frac{21\,d^6\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(d\tan(bx+a)+\sqrt{2}\,\sqrt{d\tan(bx+a)}\,\sqrt{d}+d\right)}{\sqrt{d}}+\right.}{128\,bd^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/128*(21*d^6*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan
(b*x + a)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(
d) - 2*sqrt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(b*x + a)
+ sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(b*x
 + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d)) - 8*(11*(d*tan(b
*x + a))^(7/2)*d^6 + 7*(d*tan(b*x + a))^(3/2)*d^8)/(d^4*tan(b*x + a)^4 + 2*
d^4*tan(b*x + a)^2 + d^4))/(b*d^5)
```

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

$$\int \sin\left(a+b\,x\right)^4\,\sqrt{d\,\tan\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^4*(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)^4*(d*tan(a + b*x))^(1/2), x)
```

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

$$\int \sqrt{d \tan (a+bx)} \sin^4 (a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**4*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*sin(a + b*x)**4, x)
```

3.55 $\int \sin^2(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=227

$$-\frac{3\sqrt{d}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}+\frac{3\sqrt{d}\,\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}+\frac{3\sqrt{d}\,\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\,\sqrt{d\tan(a+b}\right.}{8\sqrt{2}\,b}$$

```
[Out] -3/8*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))*d^(1/2)/b*2^(1/2)+3/8*a
rctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))*d^(1/2)/b*2^(1/2)+3/16*ln(d^(
1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))*d^(1/2)/b*2^(1/2)-3/1
6*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))*d^(1/2)/b*2^(
1/2)-1/2*cos(b*x+a)^2*(d*tan(b*x+a))^(3/2)/b/d
```

Rubi [A] time = 0.16, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.429$, Rules used = {2591, 288, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{3\sqrt{d}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}+\frac{3\sqrt{d}\,\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}+\frac{3\sqrt{d}\,\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\,\sqrt{d\tan(a+b}\right.}{8\sqrt{2}\,b}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-3*Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*
b) + (3*Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt
[2]*b) + (3*Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan
[a + b*x]]])/(8*Sqrt[2]*b) - (3*Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x]
+ Sqrt[2]*Sqrt[d*Tan[a + b*x]]])/(8*Sqrt[2]*b) - (Cos[a + b*x]^2*(d*Tan[a +
 b*x])^(3/2))/(2*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] && !I
```

```
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^2(a+bx)\sqrt{d\tan(a+bx)}\,dx = \frac{d\,\mathrm{Subst}\left(\int \frac{x^{5/2}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd} + \frac{(3d)\,\mathrm{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\tan(a+bx)\right)}{4b}$$
$$= -\frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd} + \frac{(3d)\,\mathrm{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right.}{2b}$$
$$= -\frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd} - \frac{(3d)\,\mathrm{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right.}{4b}$$
$$= -\frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd} + \frac{\left(3\sqrt{d}\right)\mathrm{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\,\mathrm{ta}}\right.}{8\sqrt{2}\,b}$$
$$= \frac{3\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}\,b} - \frac{3\sqrt{d}\log\left(\sqrt{d}+\sqrt{\right.}}{}$$
$$= -\frac{3\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} + \frac{3\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} + \frac{3\sqrt{d}\,\mathrm{l}}{}$$

Mathematica [A] time = 0.18, size = 104, normalized size = 0.46

$$-\frac{\sqrt{\sin(2(a+bx))}\sqrt{d\tan(a+bx)}\left(2\sqrt{\sin(2(a+bx))}+3\csc(a+bx)\sin^{-1}(\cos(a+bx)-\sin(a+bx))+3\csc(a+\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] -1/8*((3*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Csc[a + b*x] + 3*Csc[a + b*x]*
Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*x)]]] + 2*Sqrt[Sin[2*(a
 + b*x)]])*Sqrt[Sin[2*(a + b*x)]]*Sqrt[d*Tan[a + b*x]])/b
```

fricas [B] time = 113.86, size = 1903, normalized size = 8.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/64*(12*sqrt(2)*b*(d^2/b^4)^(1/4)*arctan((sqrt(4*b^2*d^3*sqrt(d^2/b^4)*cos
(b*x + a)*sin(b*x + a) + d^4 - 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x +
 a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin
(b*x + a)/cos(b*x + a)))*(2*d^2*cos(b*x + a)*sin(b*x + a) + b^2*d*sqrt(d^2/
b^4) + (sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d*(d^2/b^4)^
(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) + (sqrt
(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/
b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*d^4*cos(b*
x + a)^2 - d^4)) + 12*sqrt(2)*b*(d^2/b^4)^(1/4)*arctan(-(sqrt(4*b^2*d^3*sqr
t(d^2/b^4)*cos(b*x + a)*sin(b*x + a) + d^4 + 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^(
3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)
^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(2*d^2*cos(b*x + a)*sin(b*x + a) + b
^2*d*sqrt(d^2/b^4) - (sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a)^2 + sqrt(2)*
b*d*(d^2/b^4)^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x
+ a))) - (sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(
2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))
/(2*d^4*cos(b*x + a)^2 - d^4)) + 12*sqrt(2)*b*(d^2/b^4)^(1/4)*arctan(-1/2*(
2*d^4*sin(b*x + a) - sqrt(4*b^2*d^3*sqrt(d^2/b^4)*cos(b*x + a)*sin(b*x + a)
 + d^4 + 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqr
t(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)
))*(sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(d^2/b^4)^(1/4)*
sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (sqrt(2)*b^3*d^2*(d^2/b^4
)^(3/4)*cos(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*sin(b*x + a))*sqrt(d*s
in(b*x + a)/cos(b*x + a)) - 4*(b^2*d^3*cos(b*x + a)^3 - b^2*d^3*cos(b*x + a
))*sqrt(d^2/b^4))/((2*d^4*cos(b*x + a)^2 - d^4)*sin(b*x + a))) + 12*sqrt(2)
*b*(d^2/b^4)^(1/4)*arctan(1/2*(2*d^4*sin(b*x + a) + sqrt(4*b^2*d^3*sqrt(d^2
/b^4)*cos(b*x + a)*sin(b*x + a) + d^4 - 2*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*
cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*s
qrt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt(2)*b^3*(d^2/b^4)^(3/4)*cos(b*x + a)
 + sqrt(2)*b*d*(d^2/b^4)^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x +
a)) - (sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a) + sqrt(2)*b*d^3*(d^2/b^
4)^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^3*cos(b
*x + a)^3 - b^2*d^3*cos(b*x + a))*sqrt(d^2/b^4))/((2*d^4*cos(b*x + a)^2 - d
^4)*sin(b*x + a))) - 3*sqrt(2)*b*(d^2/b^4)^(1/4)*log(2916*b^2*d^3*sqrt(d^2/
b^4)*cos(b*x + a)*sin(b*x + a) + 729*d^4 + 1458*(sqrt(2)*b^3*d^2*(d^2/b^4)^
(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a
)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) + 3*sqrt(2)*b*(d^2/b^4)^(1/4)*log(2
```

```
916*b^2*d^3*sqrt(d^2/b^4)*cos(b*x + a)*sin(b*x + a) + 729*d^4 - 1458*(sqrt(
2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b
^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) - 3*sqrt(2)*b*
(d^2/b^4)^(1/4)*log(729/4*b^2*d^3*sqrt(d^2/b^4)*cos(b*x + a)*sin(b*x + a) +
 729/16*d^4 + 729/8*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3/4)*cos(b*x + a)*sin(b*x +
 a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos
(b*x + a))) + 3*sqrt(2)*b*(d^2/b^4)^(1/4)*log(729/4*b^2*d^3*sqrt(d^2/b^4)*c
os(b*x + a)*sin(b*x + a) + 729/16*d^4 - 729/8*(sqrt(2)*b^3*d^2*(d^2/b^4)^(3
/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d^3*(d^2/b^4)^(1/4)*cos(b*x + a)^
2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) - 32*sqrt(d*sin(b*x + a)/cos(b*x + a)
)*cos(b*x + a)*sin(b*x + a))/b
```

giac [A] time = 0.99, size = 219, normalized size = 0.96

$$-\frac{\frac{8\sqrt{d\tan(bx+a)}\,d^3\tan(bx+a)}{\left(d^2\tan(bx+a)^2+d^2\right)b}-\frac{6\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{b}-\frac{6\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{b}+\frac{3\sqrt{2}\,|d|^{\frac{3}{2}}\log(\cdots}{\cdots}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] -1/16*(8*sqrt(d*tan(b*x + a))*d^3*tan(b*x + a)/((d^2*tan(b*x + a)^2 + d^2)*
b) - 6*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sq
rt(d*tan(b*x + a)))/sqrt(abs(d)))/b - 6*sqrt(2)*abs(d)^(3/2)*arctan(-1/2*sq
rt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b + 3*s
qrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(
abs(d)) + abs(d))/b - 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) - sqrt(2)*s
qrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/b)/d
```

maple [C] time = 0.48, size = 516, normalized size = 2.27

$$-\frac{\left(-1+\cos\left(bx+a\right)\right)\left(3i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1-\cdots}{\cdots}}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/8/b*(-1+cos(b*x+a))*(3*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a)
)^(1/2)-3*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2
*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+
```

```
a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-3*Ellipt
icPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((
-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-3*EllipticPi(((1-cos(b*x+a
)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin
(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)
+sin(b*x+a))/sin(b*x+a))^(1/2)+2*cos(b*x+a)^2*2^(1/2)-2*cos(b*x+a)*2^(1/2))
*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(1/2)/sin(b*x+a)^3*2^(1/2)
```

maxima [A] time = 0.64, size = 194, normalized size = 0.85

$$\frac{3\,d^4\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(d\tan(bx+a)+\sqrt{2}\,\sqrt{d\tan(bx+a)}\,\sqrt{d}+d\right)}{\sqrt{d}}+\right.}{16\,bd^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/16*(3*d^4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(b
*x + a)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(b*x + a) +
sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(b*x +
 a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d)) - 8*(d*tan(b*x + a
))^(3/2)*d^4/(d^2*tan(b*x + a)^2 + d^2))/(b*d^3)
```

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

$$\int \sin\left(a+b\,x\right)^2\,\sqrt{d\,\tan\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)^2*(d*tan(a + b*x))^(1/2), x)
```

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

$$\int \sqrt{d\tan\left(a+bx\right)}\,\sin^2\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*sin(a + b*x)**2, x)
```

3.56 $\int \csc^2(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=18

$$-\frac{2d}{b\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*d/b/(d*tan(b*x+a))^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 30}

$$-\frac{2d}{b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^2*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d)/(b*Sqrt[d*Tan[a + b*x]])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\begin{aligned}\int \csc^2(a+bx)\sqrt{d\tan(a+bx)}\,dx &= \frac{d\,\text{Subst}\left(\int \frac{1}{x^{3/2}}\,dx, x, d\tan(a+bx)\right)}{b}\\ &= -\frac{2d}{b\sqrt{d\tan(a+bx)}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 18, normalized size = 1.00

$$-\frac{2d}{b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^2*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d)/(b*Sqrt[d*Tan[a + b*x]])
```

fricas [B] time = 0.47, size = 37, normalized size = 2.06

$$-\frac{2\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos(bx+a)}{b\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)/(b*sin(b*x + a))
```

giac [A] time = 0.91, size = 16, normalized size = 0.89

$$-\frac{2\,d}{\sqrt{d\tan(bx+a)}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] -2*d/(sqrt(d*tan(b*x + a))*b)
```

maple [B] time = 0.49, size = 38, normalized size = 2.11

$$-\frac{2\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos(bx+a)}{b\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -2/b*(d*sin(b*x+a)/cos(b*x+a))^(1/2)*cos(b*x+a)/sin(b*x+a)
```

maxima [A] time = 0.55, size = 23, normalized size = 1.28

$$-\frac{2\sqrt{d\tan(bx+a)}}{b\tan(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] -2*sqrt(d*tan(b*x + a))/(b*tan(b*x + a))
```

mupad [B] time = 3.05, size = 48, normalized size = 2.67

$$-\frac{\sin\left(2\,a+2\,b\,x\right)\,\sqrt{\frac{d\,\sin(2\,a+2\,b\,x)}{\cos(2\,a+2\,b\,x)+1}}}{b\,\sin\left(a+b\,x\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(1/2)/sin(a + b*x)^2,x)
```

```
[Out] -(sin(2*a + 2*b*x)*((d*sin(2*a + 2*b*x))/(cos(2*a + 2*b*x) + 1))^(1/2))/(b*
sin(a + b*x)^2)
```

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

$$\int\sqrt{d\tan\left(a+bx\right)}\,\csc^2\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*csc(a + b*x)**2, x)
```

3.57 $\int \csc^4(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=41

$$-\frac{2d^3}{5b(d\tan(a+bx))^{5/2}}-\frac{2d}{b\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*d/b/(d*tan(b*x+a))^(1/2)-2/5*d^3/b/(d*tan(b*x+a))^(5/2)
```

Rubi [A] time = 0.04, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 14}

$$-\frac{2d^3}{5b(d\tan(a+bx))^{5/2}}-\frac{2d}{b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^4*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d^3)/(5*b*(d*Tan[a + b*x])^(5/2)) - (2*d)/(b*Sqrt[d*Tan[a + b*x]])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^4(a+bx)\sqrt{d\tan(a+bx)}\,dx = \frac{d\,\text{Subst}\left(\int \frac{d^2+x^2}{x^{7/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^2}{x^{7/2}}+\frac{1}{x^{3/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^3}{5b(d\tan(a+bx))^{5/2}} - \frac{2d}{b\sqrt{d\tan(a+bx)}}$$

Mathematica [A] time = 0.13, size = 30, normalized size = 0.73

$$-\frac{2d\left(\csc^2(a+bx)+4\right)}{5b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^4*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d*(4 + Csc[a + b*x]^2))/(5*b*Sqrt[d*Tan[a + b*x]])
```

fricas [A] time = 0.53, size = 63, normalized size = 1.54

$$-\frac{2\left(4\cos(bx+a)^3-5\cos(bx+a)\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{5\left(b\cos(bx+a)^2-b\right)\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] -2/5*(4*cos(b*x + a)^3 - 5*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))/
((b*cos(b*x + a)^2 - b)*sin(b*x + a))
```

giac [A] time = 0.69, size = 43, normalized size = 1.05

$$-\frac{2\left(5d^4\tan(bx+a)^2+d^4\right)}{5\sqrt{d\tan(bx+a)}\,bd^3\tan(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

[Out] -2/5*(5*d^4*tan(b*x + a)^2 + d^4)/(sqrt(d*tan(b*x + a))*b*d^3*tan(b*x + a)^2)

maple [A] time = 0.59, size = 50, normalized size = 1.22

$$\frac{2\left(4\left(\cos^2\left(bx+a\right)\right)-5\right)\cos\left(bx+a\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{5b\sin\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^4*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] 2/5/b*(4*cos(b*x+a)^2-5)*cos(b*x+a)*(d*sin(b*x+a)/cos(b*x+a))^(1/2)/sin(b*x+a)^3
```

maxima [A] time = 0.53, size = 33, normalized size = 0.80

$$-\frac{2\left(5\,d^2\tan\left(bx+a\right)^2+d^2\right)d}{5\,\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] -2/5*(5*d^2*tan(b*x + a)^2 + d^2)*d/((d*tan(b*x + a))^(5/2)*b)
```

mupad [B] time = 6.53, size = 102, normalized size = 2.49

$$\frac{8\sqrt{-\frac{d\left(e^{a\,2i+b\,x\,2i}\,1i-i\right)}{e^{a\,2i+b\,x\,2i}+1}}\,\left(e^{a\,2i+b\,x\,2i}\,2i+e^{a\,4i+b\,x\,4i}\,2i-e^{a\,6i+b\,x\,6i}\,1i-i\right)}{5\,b\left(e^{a\,2i+b\,x\,2i}-1\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(1/2)/sin(a + b*x)^4,x)
```

```
[Out] (8*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*(exp(a*2i + b*x*2i)*2i + exp(a*4i + b*x*4i)*2i - exp(a*6i + b*x*6i)*1i - 1i))/(5*b*(exp(a*2i + b*x*2i) - 1)^3)
```

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

$$\int\sqrt{d\tan\left(a+bx\right)}\,\csc^4\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**4*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*csc(a + b*x)**4, x)
```

3.58 $\int \csc^6(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=63

$$-\frac{2d^5}{9b(d\tan(a+bx))^{9/2}}-\frac{4d^3}{5b(d\tan(a+bx))^{5/2}}-\frac{2d}{b\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*d/b/(d*tan(b*x+a))^(1/2)-2/9*d^5/b/(d*tan(b*x+a))^(9/2)-4/5*d^3/b/(d*tan
(b*x+a))^(5/2)
```

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 270}

$$-\frac{2d^5}{9b(d\tan(a+bx))^{9/2}}-\frac{4d^3}{5b(d\tan(a+bx))^{5/2}}-\frac{2d}{b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^6*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d^5)/(9*b*(d*Tan[a + b*x])^(9/2)) - (4*d^3)/(5*b*(d*Tan[a + b*x])^(5/2)
) - (2*d)/(b*Sqrt[d*Tan[a + b*x]])
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^6(a+bx)\sqrt{d\tan(a+bx)}\,dx = \frac{d\,\text{Subst}\left(\int \frac{(d^2+x^2)^2}{x^{11/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^4}{x^{11/2}} + \frac{2d^2}{x^{7/2}} + \frac{1}{x^{3/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^5}{9b(d\tan(a+bx))^{9/2}} - \frac{4d^3}{5b(d\tan(a+bx))^{5/2}} - \frac{2d}{b\sqrt{d\tan(a+bx)}}$$

Mathematica [A] time = 0.17, size = 50, normalized size = 0.79

$$\frac{2d(20\cos(2(a+bx)) - 4\cos(4(a+bx)) - 21)\csc^4(a+bx)}{45b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^6*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (2*d*(-21 + 20*Cos[2*(a + b*x)] - 4*Cos[4*(a + b*x)])*Csc[a + b*x]^4)/(45*b
*Sqrt[d*Tan[a + b*x]])
```

fricas [A] time = 0.47, size = 82, normalized size = 1.30

$$-\frac{2\left(32\cos(bx+a)^5 - 72\cos(bx+a)^3 + 45\cos(bx+a)\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{45\left(b\cos(bx+a)^4 - 2b\cos(bx+a)^2 + b\right)\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] -2/45*(32*cos(b*x + a)^5 - 72*cos(b*x + a)^3 + 45*cos(b*x + a))*sqrt(d*sin(
b*x + a)/cos(b*x + a))/((b*cos(b*x + a)^4 - 2*b*cos(b*x + a)^2 + b)*sin(b*x
 + a))
```

giac [A] time = 0.52, size = 58, normalized size = 0.92

$$-\frac{2\left(45d^6\tan(bx+a)^4 + 18d^6\tan(bx+a)^2 + 5d^6\right)}{45\sqrt{d\tan(bx+a)}\,bd^5\tan(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] -2/45*(45*d^6*tan(b*x + a)^4 + 18*d^6*tan(b*x + a)^2 + 5*d^6)/(sqrt(d*tan(b
*x + a))*b*d^5*tan(b*x + a)^4)
```

maple [A] time = 0.58, size = 60, normalized size = 0.95

$$-\frac{2\left(32\left(\cos^{4}\left(bx+a\right)\right)-72\left(\cos^{2}\left(bx+a\right)\right)+45\right)\cos\left(bx+a\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{45b\sin\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^6*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -2/45/b*(32*cos(b*x+a)^4-72*cos(b*x+a)^2+45)*cos(b*x+a)*(d*sin(b*x+a)/cos(b
*x+a))^(1/2)/sin(b*x+a)^5
```

maxima [A] time = 0.32, size = 48, normalized size = 0.76

$$-\frac{2\left(45\,d^{4}\tan\left(bx+a\right)^{4}+18\,d^{4}\tan\left(bx+a\right)^{2}+5\,d^{4}\right)d}{45\,\left(d\tan\left(bx+a\right)\right)^{\frac{9}{2}}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] -2/45*(45*d^4*tan(b*x + a)^4 + 18*d^4*tan(b*x + a)^2 + 5*d^4)*d/((d*tan(b*x
 + a))^(9/2)*b)
```

mupad [B] time = 7.02, size = 356, normalized size = 5.65

$$-\frac{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}\,64\mathrm{i}}{45\,b\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}+\frac{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}\,64\mathrm{i}}{45\,b\,{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}^2}-\frac{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}\right.}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+}}}{15\,b\,{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(1/2)/sin(a + b*x)^6,x)
```

```
[Out] ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*
x*2i) + 1))^(1/2)*64i)/(45*b*(exp(a*2i + b*x*2i) - 1)^2) - ((exp(a*2i + b*x
*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2
)*64i)/(45*b*(exp(a*2i + b*x*2i) - 1)) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(ex
p(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*32i)/(15*b*(exp(
a*2i + b*x*2i) - 1)^3) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)
```

```
*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*64i)/(9*b*(exp(a*2i + b*x*2i) -
1)^4) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a
*2i + b*x*2i) + 1))^(1/2)*32i)/(9*b*(exp(a*2i + b*x*2i) - 1)^5)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**6*(d*tan(b*x+a))**(1/2),x)
[Out] Timed out
```

3.59 $\int \sin^3(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=105

$$-\frac{d\sin^3(a+bx)}{3b\sqrt{d\tan(a+bx)}}-\frac{5d\sin(a+bx)}{6b\sqrt{d\tan(a+bx)}}+\frac{5\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{12b}$$

```
[Out] -5/6*d*sin(b*x+a)/b/(d*tan(b*x+a))^(1/2)-1/3*d*sin(b*x+a)^3/b/(d*tan(b*x+a)
)^(1/2)-5/12*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*Ellip
ticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.13, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2598, 2601, 2573, 2641}

$$-\frac{d\sin^3(a+bx)}{3b\sqrt{d\tan(a+bx)}}-\frac{5d\sin(a+bx)}{6b\sqrt{d\tan(a+bx)}}+\frac{5\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{12b}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-5*d*Sin[a + b*x])/(6*b*Sqrt[d*Tan[a + b*x]]) - (d*Sin[a + b*x]^3)/(3*b*Sq
rt[d*Tan[a + b*x]]) + (5*Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqrt[Sin
[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(12*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
```

```
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \sin^3(a+bx)\sqrt{d\tan(a+bx)}\,dx = -\frac{d\sin^3(a+bx)}{3b\sqrt{d\tan(a+bx)}} + \frac{5}{6}\int \sin(a+bx)\sqrt{d\tan(a+bx)}\,dx$$
$$= -\frac{5d\sin(a+bx)}{6b\sqrt{d\tan(a+bx)}} - \frac{d\sin^3(a+bx)}{3b\sqrt{d\tan(a+bx)}} + \frac{5}{12}\int \csc(a+bx)\sqrt{d\tan(a+bx)}$$
$$= -\frac{5d\sin(a+bx)}{6b\sqrt{d\tan(a+bx)}} - \frac{d\sin^3(a+bx)}{3b\sqrt{d\tan(a+bx)}} + \frac{\left(5\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)}{12\sqrt{\sin(a+}}$$
$$= -\frac{5d\sin(a+bx)}{6b\sqrt{d\tan(a+bx)}} - \frac{d\sin^3(a+bx)}{3b\sqrt{d\tan(a+bx)}} + \frac{1}{12}\left(5\csc(a+bx)\sqrt{\sin(2a+2bx}\right.$$
$$= -\frac{5d\sin(a+bx)}{6b\sqrt{d\tan(a+bx)}} - \frac{d\sin^3(a+bx)}{3b\sqrt{d\tan(a+bx)}} + \frac{5\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{}}{12b}$$

Mathematica [C] time = 1.94, size = 139, normalized size = 1.32

$$-\frac{\cos(2(a+bx))\sec(a+bx)\sqrt{d\tan(a+bx)}\left((\cos(2(a+bx))-6)\sqrt{\tan(a+bx)}\sqrt{\sec^2(a+bx)}-5\sqrt[4]{-1}\sec^2(a+b\right.}{6b\sqrt{\tan(a+bx)}\left(\tan^2(a+bx)-1\right)\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] -1/6*(Cos[2*(a + b*x)]*Sec[a + b*x]*(-5*(-1)^(1/4)*EllipticF[I*ArcSinh[(-1)
^(1/4)*Sqrt[Tan[a + b*x]]], -1]*Sec[a + b*x]^2 + (-6 + Cos[2*(a + b*x)])*Sq
rt[Sec[a + b*x]^2]*Sqrt[Tan[a + b*x]])*Sqrt[d*Tan[a + b*x]])/(b*Sqrt[Sec[a
+ b*x]^2]*Sqrt[Tan[a + b*x]]*(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(\cos\left(bx+a\right)^2-1\right)\sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(cos(b*x + a)^2 - 1)*sqrt(d*tan(b*x + a))*sin(b*x + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:ext_reduce Error: Bad Argument TypeEvaluatio
n time: 8.54Done
```

maple [A] time = 0.54, size = 216, normalized size = 2.06

$$-\frac{(-1+\cos(bx+a))\left(5\sin(bx+a)\,\mathrm{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/12/b*(-1+cos(b*x+a))*(5*sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/
sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2)-2*cos(b*x+a)^4*2^(1/2)+2*cos(b*x+a)^3*2^(1/2)+7*cos(b*x+a)^2*2^(1/2)
-7*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(1/2)/sin
(b*x+a)^4*2^(1/2)
```

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

$$\int \sqrt{d\tan(bx+a)}\,\sin(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*tan(b*x + a))*sin(b*x + a)^3, x)
```

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

$$\int \sin(a+b\,x)^3\,\sqrt{d\tan(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)^3*(d*tan(a + b*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Timed out
```

3.60 $\int \sin(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=75

$$\frac{\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{2b}-\frac{d\sin(a+bx)}{b\sqrt{d\tan(a+bx)}}$$

```
[Out] -d*sin(b*x+a)/b/(d*tan(b*x+a))^(1/2)-1/2*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(
1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^
(1/2)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.09, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2598, 2601, 2573, 2641}

$$\frac{\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{2b}-\frac{d\sin(a+bx)}{b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] -((d*Sin[a + b*x])/(b*Sqrt[d*Tan[a + b*x]])) + (Csc[a + b*x]*EllipticF[a -
Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(2*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \sin(a+bx)\sqrt{d\tan(a+bx)}\,dx = -\frac{d\sin(a+bx)}{b\sqrt{d\tan(a+bx)}}+\frac{1}{2}\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx$$

$$= -\frac{d\sin(a+bx)}{b\sqrt{d\tan(a+bx)}}+\frac{\left(\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}\,dx}{2\sqrt{\sin(a+bx)}}$$

$$= -\frac{d\sin(a+bx)}{b\sqrt{d\tan(a+bx)}}+\frac{1}{2}\left(\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{}{\sqrt{\sin}}$$

$$= -\frac{d\sin(a+bx)}{b\sqrt{d\tan(a+bx)}}+\frac{\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+}}{2b}$$

Mathematica [C] time = 1.05, size = 57, normalized size = 0.76

$$\frac{\cos(a+bx)\sqrt{d\tan(a+bx)}\left(\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(a+bx)\right)-1\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (Cos[a + b*x]*(-1 + Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[a + b*x]^2]*Sqrt[
Sec[a + b*x]^2])*Sqrt[d*Tan[a + b*x]])/b
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan(bx+a)}\,\sin(bx+a)\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*sin(b*x + a), x)
```

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

$$\int \sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(b*x + a))*sin(b*x + a), x)
```

maple [B] time = 0.41, size = 188, normalized size = 2.51

$$-\frac{\left(-1+\cos\left(bx+a\right)\right)\left(\sin\left(bx+a\right)\mathrm{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\right.}{2b\sin\left(bx+a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/2/b*(-1+cos(b*x+a))*(sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x
+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2)+cos(b*x+a)^2*2^(1/2)-cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2*(d*sin(b*x+a)
/cos(b*x+a))^(1/2)/sin(b*x+a)^4*2^(1/2)
```

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

$$\int \sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*tan(b*x + a))*sin(b*x + a), x)
```

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

$$\int \sin\left(a+b\,x\right)\,\sqrt{d\tan\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)*(d*tan(a + b*x))^(1/2), x)
```

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

$$\int \sqrt{d \tan(a+bx)} \sin(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*sin(a + b*x), x)
```

3.61 $\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{b}$$

```
[Out] -csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1
/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.07, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2601, 2573, 2641}

$$\frac{\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Ta
n[a + b*x]])/b
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] && !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx = \frac{\left(\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}\,dx}{\sqrt{\sin(a+bx)}}$$
$$= \left(\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{1}{\sqrt{\sin(2a+2bx)}}\,dx$$
$$= \frac{\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}{b}$$

Mathematica [C] time = 0.15, size = 73, normalized size = 1.55

$$-\frac{2\sqrt[4]{-1}\cos(a+bx)\sqrt{\sec^2(a+bx)}\sqrt{d\tan(a+bx)}F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(a+bx)}\right)\middle|-1\right)}{b\sqrt{\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*(-1)^(1/4)*Cos[a + b*x]*EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x
]]], -1]*Sqrt[Sec[a + b*x]^2]*Sqrt[d*Tan[a + b*x]])/(b*Sqrt[Tan[a + b*x]])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan(bx+a)}\csc(bx+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a), x)
```

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

$$\int \sqrt{d\tan(bx+a)}\csc(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(b*x + a))*csc(b*x + a), x)
```

maple [B] time = 0.50, size = 157, normalized size = 3.34

$$-\frac{\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\,(-1+\cos(bx+a))\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\ \text{EllipticF}\left(\sqrt{\frac{1-\cos(}{}}\right.}{b\sin(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/b*(d*sin(b*x+a)/cos(b*x+a))^(1/2)*(-1+cos(b*x+a))*((1-cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+c
os(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2),1/2*2^(1/2))*(cos(b*x+a)+1)^2/sin(b*x+a)^3*2^(1/2)
```

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

$$\int \sqrt{d \tan (bx + a)} \csc (bx + a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*tan(b*x + a))*csc(b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{d \tan (a + b\,x)}}{\sin (a + b\,x)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(1/2)/sin(a + b*x),x)
```

```
[Out] int((d*tan(a + b*x))^(1/2)/sin(a + b*x), x)
```

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

$$\int \sqrt{d \tan (a + bx)} \csc (a + bx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*csc(a + b*x), x)
```

3.62 $\int \csc^3(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=77

$$\frac{2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}-\frac{2d\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}$$

```
[Out] -2/3*d*csc(b*x+a)/b/(d*tan(b*x+a))^(1/2)-2/3*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^
2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2
*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.11, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2599, 2601, 2573, 2641}

$$\frac{2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}-\frac{2d\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^3*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d*Csc[a + b*x])/(3*b*Sqrt[d*Tan[a + b*x]]) + (2*Csc[a + b*x]*EllipticF[
a - Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \csc^3(a+bx)\sqrt{d\tan(a+bx)}\,dx = -\frac{2d\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2}{3}\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx$$
$$= -\frac{2d\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{\left(2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+}}}{3\sqrt{\sin(a+bx)}}$$
$$= -\frac{2d\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{1}{3}\left(2\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}\right)\int$$
$$= -\frac{2d\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d\,\text{ta}}}{3b}$$

Mathematica [C] time = 0.59, size = 115, normalized size = 1.49

$$\frac{2\cos(2(a+bx))\csc^3(a+bx)(d\tan(a+bx))^{3/2}\left(\sqrt{\sec^2(a+bx)}+2\sqrt[4]{-1}\tan^{\frac{3}{2}}(a+bx)F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(a+}\right.\right.\right.}{3bd\left(\tan^2(a+bx)-1\right)\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^3*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (2*Cos[2*(a + b*x)]*Csc[a + b*x]^3*(d*Tan[a + b*x])^(3/2)*(Sqrt[Sec[a + b*x
]^2] + 2*(-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1]
*Tan[a + b*x]^(3/2)))/(3*b*d*Sqrt[Sec[a + b*x]^2]*(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,\csc\left(bx+a\right)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)^3, x)

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

$$\int \sqrt{d \tan(bx+a)} \csc(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(1/2),x, algorithm="giac")

[Out] integrate(sqrt(d*tan(b*x + a))*csc(b*x + a)^3, x)

maple [B] time = 0.59, size = 297, normalized size = 3.86

$$\frac{(-1+\cos(bx+a))^2 \left(2 \operatorname{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}, \frac{\sqrt{2}}{2}\right) \cos(bx+a) \sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}} \sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}} \sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(csc(b*x+a)^3*(d*tan(b*x+a))^(1/2),x)

[Out] 1/3/b*(-1+cos(b*x+a))^2*(2*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*sin(b*x+a)+2*sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(1/2)/sin(b*x+a)^6*2^(1/2)

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

$$\int \sqrt{d \tan(bx+a)} \csc(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")

[Out] integrate(sqrt(d*tan(b*x + a))*csc(b*x + a)^3, x)

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

$$\int \frac{\sqrt{d \tan(a+b\,x)}}{\sin(a+b\,x)^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(1/2)/sin(a + b*x)^3,x)
```

```
[Out] int((d*tan(a + b*x))^(1/2)/sin(a + b*x)^3, x)
```

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

$$\int \sqrt{d\tan\left(a+bx\right)}\,\csc^{3}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*csc(a + b*x)**3, x)
```

3.63 $\int \csc^5(a+bx)\sqrt{d\tan(a+bx)}\,dx$

Optimal. Leaf size=105

$$-\frac{2d\csc^3(a+bx)}{7b\sqrt{d\tan(a+bx)}}-\frac{4d\csc(a+bx)}{7b\sqrt{d\tan(a+bx)}}+\frac{4\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{7b}$$

```
[Out] -4/7*d*csc(b*x+a)/b/(d*tan(b*x+a))^(1/2)-2/7*d*csc(b*x+a)^3/b/(d*tan(b*x+a)
)^(1/2)-4/7*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*Ellipt
icF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.14, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2599, 2601, 2573, 2641}

$$-\frac{2d\csc^3(a+bx)}{7b\sqrt{d\tan(a+bx)}}-\frac{4d\csc(a+bx)}{7b\sqrt{d\tan(a+bx)}}+\frac{4\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{7b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^5*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-4*d*Csc[a + b*x])/(7*b*Sqrt[d*Tan[a + b*x]]) - (2*d*Csc[a + b*x]^3)/(7*b*
Sqrt[d*Tan[a + b*x]]) + (4*Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqrt[S
in[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(7*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
```

```
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \csc^5(a+bx)\sqrt{d\tan(a+bx)}\,dx = -\frac{2d\csc^3(a+bx)}{7b\sqrt{d\tan(a+bx)}}+\frac{6}{7}\int \csc^3(a+bx)\sqrt{d\tan(a+bx)}\,dx$$
$$= -\frac{4d\csc(a+bx)}{7b\sqrt{d\tan(a+bx)}}-\frac{2d\csc^3(a+bx)}{7b\sqrt{d\tan(a+bx)}}+\frac{4}{7}\int \csc(a+bx)\sqrt{d\tan(a+bx)}$$
$$= -\frac{4d\csc(a+bx)}{7b\sqrt{d\tan(a+bx)}}-\frac{2d\csc^3(a+bx)}{7b\sqrt{d\tan(a+bx)}}+\frac{\left(4\sqrt{\cos(a+bx)}\,\sqrt{d\tan(a+bx)}\right.}{7\sqrt{\sin(a}}$$
$$= -\frac{4d\csc(a+bx)}{7b\sqrt{d\tan(a+bx)}}-\frac{2d\csc^3(a+bx)}{7b\sqrt{d\tan(a+bx)}}+\frac{1}{7}\left(4\csc(a+bx)\sqrt{\sin(2a+2bx}\right.$$
$$= -\frac{4d\csc(a+bx)}{7b\sqrt{d\tan(a+bx)}}-\frac{2d\csc^3(a+bx)}{7b\sqrt{d\tan(a+bx)}}+\frac{4\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)}{7}$$

Mathematica [C] time = 1.42, size = 124, normalized size = 1.18

$$-\frac{2d\cos(2(a+bx))\csc^3(a+bx)\left((\cos(2(a+bx))-2)\sec^2(a+bx)^{3/2}-4\sqrt[4]{-1}\,\tan^{\frac{7}{2}}(a+bx)F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\,\sqrt{\text{ta}}\right.\right.\right.}{7b\left(\tan^2(a+bx)-1\right)\sqrt{\sec^2(a+bx)}\,\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^5*Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d*Cos[2*(a + b*x)]*Csc[a + b*x]^3*((-2 + Cos[2*(a + b*x)])*(Sec[a + b*x
]^2)^(3/2) - 4*(-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]
], -1]*Tan[a + b*x]^(7/2)))/(7*b*Sqrt[Sec[a + b*x]^2]*Sqrt[d*Tan[a + b*x]]*
(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan(bx+a)}\,\csc(bx+a)^5\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^5*(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)^5, x)
```

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

$$\int \sqrt{d \tan\left(bx + a\right)} \csc\left(bx + a\right)^{5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^5*(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(b*x + a))*csc(b*x + a)^5, x)
```

maple [B] time = 0.60, size = 550, normalized size = 5.24

$$-\frac{\left(-1+\cos\left(bx+a\right)\right)^{2} \left(4 \left(\cos^{3}\left(bx+a\right)\right) \mathrm{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}, \frac{\sqrt{2}}{2}\right) \sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\, \sqrt{\frac{-1+\cos(bx+a)+\sin(bx}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^5*(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/7/b*(-1+cos(b*x+a))^2*(4*cos(b*x+a)^3*EllipticF(((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*sin(b*x+a)+4*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+
a)^2*sin(b*x+a)-4*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/
2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+si
n(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*si
n(b*x+a)-4*sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-2*cos(b*x
+a)^3*2^(1/2)+3*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+
a))^(1/2)/sin(b*x+a)^8*2^(1/2)
```

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

$$\int \sqrt{d \tan\left(bx + a\right)} \csc\left(bx + a\right)^{5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^5*(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*tan(b*x + a))*csc(b*x + a)^5, x)
```

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

$$\int \frac{\sqrt{d\tan\left(a+b\,x\right)}}{{\sin\left(a+b\,x\right)}^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(1/2)/sin(a + b*x)^5,x)
```

```
[Out] int((d*tan(a + b*x))^(1/2)/sin(a + b*x)^5, x)
```

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

$$\int \sqrt{d\tan\left(a+bx\right)}\csc^{5}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**5*(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(a + b*x))*csc(a + b*x)**5, x)
```

3.64 $\int \sin^4(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=277

$$\frac{45d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b}-\frac{45d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b}+\frac{45d^{3/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a-}\right.}{64\sqrt{2}\,b}$$

```
[Out] 45/64*d^(3/2)*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-45/6
4*d^(3/2)*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)+45/128*d
^(3/2)*ln(d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2
)-45/128*d^(3/2)*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a)
)/b*2^(1/2)+45/16*d*(d*tan(b*x+a))^(1/2)/b-9/16*cos(b*x+a)^2*(d*tan(b*x+a))
^(5/2)/b/d-1/4*cos(b*x+a)^4*(d*tan(b*x+a))^(9/2)/b/d^3
```

Rubi [A] time = 0.20, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {2591, 288, 321, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{45d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b}-\frac{45d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b}+\frac{45d^{3/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a-}\right.}{64\sqrt{2}\,b}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^4*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (45*d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]
*b) - (45*d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*S
qrt[2]*b) + (45*d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d
*Tan[a + b*x]]])/(64*Sqrt[2]*b) - (45*d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a +
 b*x] + Sqrt[2]*Sqrt[d*Tan[a + b*x]]])/(64*Sqrt[2]*b) + (45*d*Sqrt[d*Tan[a
+ b*x]])/(16*b) - (9*Cos[a + b*x]^2*(d*Tan[a + b*x])^(5/2))/(16*b*d) - (Cos
[a + b*x]^4*(d*Tan[a + b*x])^(9/2))/(4*b*d^3)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
```

```
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^4(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{d\,\text{Subst}\left(\int \frac{x^{11/2}}{\left(d^2+x^2\right)^3}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^4(a+bx)(d\tan(a+bx))^{9/2}}{4bd^3} + \frac{(9d)\,\text{Subst}\left(\int \frac{x^{7/2}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+\right.}{8b}$$

$$= -\frac{9\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{9/2}}{4bd^3} + \frac{(45}{}$$

$$= \frac{45d\sqrt{d\tan(a+bx)}}{16b} - \frac{9\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{16bd} - \frac{\cos^4(a+bx)(d\,\text{t}}{4bd}$$

$$= \frac{45d\sqrt{d\tan(a+bx)}}{16b} - \frac{9\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{16bd} - \frac{\cos^4(a+bx)(d\,\text{t}}{4bd}$$

$$= \frac{45d\sqrt{d\tan(a+bx)}}{16b} - \frac{9\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{16bd} - \frac{\cos^4(a+bx)(d\,\text{t}}{4bd}$$

$$= \frac{45d\sqrt{d\tan(a+bx)}}{16b} - \frac{9\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{16bd} - \frac{\cos^4(a+bx)(d\,\text{t}}{4bd}$$

$$= \frac{45d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{64\sqrt{2}\,b} - \frac{45d^{3/2}\log\left(\sqrt{\right.}}{}$$

$$= \frac{45d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b} - \frac{45d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b} + \frac{4}{}$$

Mathematica [A] time = 0.77, size = 123, normalized size = 0.44

$$-\frac{d\csc(a+bx)\sqrt{d\tan(a+bx)}\left(-143\sin(a+bx)-14\sin(3(a+bx))+\sin(5(a+bx))-45\sqrt{\sin(2(a+bx))}\,\sin^{-}\right.}{64b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^4*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -1/64*(d*Csc[a + b*x]*(-143*Sin[a + b*x] - 45*ArcSin[Cos[a + b*x] - Sin[a +
 b*x]]*Sqrt[Sin[2*(a + b*x)]] + 45*Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[S
in[2*(a + b*x)]]]*Sqrt[Sin[2*(a + b*x)]] - 14*Sin[3*(a + b*x)] + Sin[5*(a +
 b*x)])*Sqrt[d*Tan[a + b*x]])/b
```

fricas [B] time = 74.62, size = 1580, normalized size = 5.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/256*(90*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(1/2*(2*d^10*sin(b*x + a) + sqrt(
4*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + d^10 + 2*(sqrt(2)*(d^6/
b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^
5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt(2)*(d^6/b^4)^(1/
4)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*si
n(b*x + a)/cos(b*x + a)) - 4*(b^2*d^7*cos(b*x + a)^3 - b^2*d^7*cos(b*x + a)
)*sqrt(d^6/b^4) + (sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a) + sqrt(2)*(d^
6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/((2*d
^10*cos(b*x + a)^2 - d^10)*sin(b*x + a))) + 90*sqrt(2)*(d^6/b^4)^(1/4)*b*ar
ctan(-1/2*(2*d^10*sin(b*x + a) - sqrt(4*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*
sin(b*x + a) + d^10 - 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x
 + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)
/cos(b*x + a)))*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/
b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^7
*cos(b*x + a)^3 - b^2*d^7*cos(b*x + a))*sqrt(d^6/b^4) - (sqrt(2)*(d^6/b^4)^
(1/4)*b*d^8*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sq
rt(d*sin(b*x + a)/cos(b*x + a)))/((2*d^10*cos(b*x + a)^2 - d^10)*sin(b*x +
a))) - 90*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(1/2*(sqrt(4*sqrt(d^6/b^4)*b^2*d^
7*cos(b*x + a)*sin(b*x + a) + d^10 - 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b
*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt
(d*sin(b*x + a)/cos(b*x + a)))*(2*d^5*sin(b*x + a) + (sqrt(2)*(d^6/b^4)^(1/
4)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*si
n(b*x + a)/cos(b*x + a))) - (sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a) - s
qrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x +
a)))/(d^10*sin(b*x + a))) - 90*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(-1/2*(sqrt(
4*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + d^10 + 2*(sqrt(2)*(d^6/
b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^
5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(2*d^5*sin(b*x + a) -
(sqrt(2)*(d^6/b^4)^(1/4)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*s
in(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) + (sqrt(2)*(d^6/b^4)^(1/4)*
b*d^8*cos(b*x + a) - sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*s
in(b*x + a)/cos(b*x + a)))/(d^10*sin(b*x + a))) - 45*sqrt(2)*(d^6/b^4)^(1/4
)*b*log(33215062500*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + 83037
65625*d^10 + 16607531250*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*
x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a
)/cos(b*x + a))) + 45*sqrt(2)*(d^6/b^4)^(1/4)*b*log(33215062500*sqrt(d^6/b^
4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + 8303765625*d^10 - 16607531250*(sqrt(
```

```
2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4
)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) - 16*(4*d*cos(
b*x + a)^4 - 17*d*cos(b*x + a)^2 - 32*d)*sqrt(d*sin(b*x + a)/cos(b*x + a)))
/b
```

giac [A] time = 0.52, size = 252, normalized size = 0.91

$$-\frac{1}{128}\,d\left(\frac{90\,\sqrt{2}\,\sqrt{|d|}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{b}+\frac{90\,\sqrt{2}\,\sqrt{|d|}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{b}+\frac{45\,\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] -1/128*d*(90*sqrt(2)*sqrt(abs(d))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d))
+ 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b + 90*sqrt(2)*sqrt(abs(d))*arctan(
-1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/
b + 45*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x + a
))*sqrt(abs(d)) + abs(d))/b - 45*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) -
sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/b - 256*sqrt(d*tan(b*x
+ a))/b - 8*(17*sqrt(d*tan(b*x + a))*d^4*tan(b*x + a)^2 + 13*sqrt(d*tan(b*x
 + a))*d^4)/((d^2*tan(b*x + a)^2 + d^2)^2*b))
```

maple [C] time = 0.54, size = 702, normalized size = 2.53

$$\frac{(-1+\cos(bx+a))\left(45i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+}{\sin(bx+}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^4*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/64/b*(-1+cos(b*x+a))*(45*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1
/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a)
)/sin(b*x+a))^(1/2)-45*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*
((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/si
n(b*x+a))^(1/2)-8*2^(1/2)*cos(b*x+a)^5+8*cos(b*x+a)^4*2^(1/2)+45*EllipticPi
(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(b*
x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x
+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-90*sin(b*x+a)*Ellip
```

```
ticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x
+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+45*EllipticPi(((1-cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/s
in(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+
a)+sin(b*x+a))/sin(b*x+a))^(1/2)+34*cos(b*x+a)^3*2^(1/2)-34*cos(b*x+a)^2*2^
(1/2)+64*cos(b*x+a)*2^(1/2)-64*2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*sin(
b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^5*2^(1/2)
```

maxima [A] time = 0.83, size = 235, normalized size = 0.85

$$-\frac{90\sqrt{2}\,d^{\frac{13}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+90\sqrt{2}\,d^{\frac{13}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+45\sqrt{2}\,d^{\frac{13}{2}}\log\left(d\,\mathrm{ta}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/128*(90*sqrt(2)*d^(13/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*
tan(b*x + a)))/sqrt(d)) + 90*sqrt(2)*d^(13/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*
sqrt(d) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + 45*sqrt(2)*d^(13/2)*log(d*tan(
b*x + a) + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 45*sqrt(2)*d^(13/2)*
log(d*tan(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 256*sqrt(d
*tan(b*x + a))*d^6 - 8*(17*(d*tan(b*x + a))^(5/2)*d^8 + 13*sqrt(d*tan(b*x +
 a))*d^10)/(d^4*tan(b*x + a)^4 + 2*d^4*tan(b*x + a)^2 + d^4))/(b*d^5)
```

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

$$\int \sin(a+b\,x)^4\,(d\tan(a+b\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^4*(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(sin(a + b*x)^4*(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**4*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.65 $\int \sin^2(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=247

$$\frac{5d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}-\frac{5d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}+\frac{5d^{3/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+b}{8\sqrt{2}\,b}$$

```
[Out] 5/8*d^(3/2)*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-5/8*d^
(3/2)*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)+5/16*d^(3/2)
*ln(d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)-5/16
*d^(3/2)*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1
/2)+5/2*d*(d*tan(b*x+a))^(1/2)/b-1/2*cos(b*x+a)^2*(d*tan(b*x+a))^(5/2)/b/d
```

Rubi [A] time = 0.18, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {2591, 288, 321, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{5d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}-\frac{5d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}+\frac{5d^{3/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+b}{8\sqrt{2}\,b}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (5*d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*b
) - (5*d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[
2]*b) + (5*d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[
a + b*x]]])/(8*Sqrt[2]*b) - (5*d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] +
 Sqrt[2]*Sqrt[d*Tan[a + b*x]]])/(8*Sqrt[2]*b) + (5*d*Sqrt[d*Tan[a + b*x]])/
(2*b) - (Cos[a + b*x]^2*(d*Tan[a + b*x])^(5/2))/(2*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^2(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{d\,\text{Subst}\left(\int \frac{x^{7/2}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{2bd} + \frac{(5d)\,\text{Subst}\left(\int \frac{x^{3/2}}{d^2+x^2}\,dx, x, d\tan(a+bx\right.}{4b}$$

$$= \frac{5d\sqrt{d\tan(a+bx)}}{2b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{2bd} - \frac{\left(5d^3\right)\text{Subst}\left(\int \frac{}{\sqrt{x}}\right.}{}$$

$$= \frac{5d\sqrt{d\tan(a+bx)}}{2b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{2bd} - \frac{\left(5d^3\right)\text{Subst}\left(\int \frac{1}{d^2+}\right.}{}$$

$$= \frac{5d\sqrt{d\tan(a+bx)}}{2b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{2bd} - \frac{\left(5d^2\right)\text{Subst}\left(\int \frac{d-}{d^2+}\right.}{}$$

$$= \frac{5d\sqrt{d\tan(a+bx)}}{2b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{5/2}}{2bd} + \frac{\left(5d^{3/2}\right)\text{Subst}\left(\int -\right.}{}$$

$$= \frac{5d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}\,b} - \frac{5d^{3/2}\log\left(\sqrt{d}\right.}{}$$

$$= \frac{5d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} - \frac{5d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} + \frac{5d^{3/}}{}$$

Mathematica [A] time = 0.55, size = 113, normalized size = 0.46

$$\frac{d\csc(a+bx)\sqrt{d\tan(a+bx)}\left(17\sin(a+bx)+\sin(3(a+bx))+5\sqrt{\sin(2(a+bx))}\sin^{-1}(\cos(a+bx)-\sin(a+bx\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (d*Csc[a + b*x]*(17*Sin[a + b*x] + 5*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Sq
rt[Sin[2*(a + b*x)]] - 5*Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a +
b*x)]]]*Sqrt[Sin[2*(a + b*x)]] + Sin[3*(a + b*x)])*Sqrt[d*Tan[a + b*x]])/(8
*b)
```

fricas [B] time = 73.44, size = 1568, normalized size = 6.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/32*(10*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(1/2*(2*d^10*sin(b*x + a) + sqrt(4
*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + d^10 + 2*(sqrt(2)*(d^6/b
^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5
*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt(2)*(d^6/b^4)^(1/4
)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*sin
(b*x + a)/cos(b*x + a)) - 4*(b^2*d^7*cos(b*x + a)^3 - b^2*d^7*cos(b*x + a))
*sqrt(d^6/b^4) + (sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a) + sqrt(2)*(d^6
/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/((2*d^
10*cos(b*x + a)^2 - d^10)*sin(b*x + a))) + 10*sqrt(2)*(d^6/b^4)^(1/4)*b*arc
tan(-1/2*(2*d^10*sin(b*x + a) - sqrt(4*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*s
in(b*x + a) + d^10 - 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x
+ a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/
cos(b*x + a)))*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b
^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^7*
cos(b*x + a)^3 - b^2*d^7*cos(b*x + a))*sqrt(d^6/b^4) - (sqrt(2)*(d^6/b^4)^(
1/4)*b*d^8*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqr
t(d*sin(b*x + a)/cos(b*x + a)))/((2*d^10*cos(b*x + a)^2 - d^10)*sin(b*x + a
))) - 10*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(1/2*(sqrt(4*sqrt(d^6/b^4)*b^2*d^7
*cos(b*x + a)*sin(b*x + a) + d^10 - 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*
x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(
d*sin(b*x + a)/cos(b*x + a)))*(2*d^5*sin(b*x + a) + (sqrt(2)*(d^6/b^4)^(1/4
)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*sin
(b*x + a)/cos(b*x + a))) - (sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a) - sq
rt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a
```

```
)))/(d^10*sin(b*x + a))) - 10*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(-1/2*(sqrt(4
*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + d^10 + 2*(sqrt(2)*(d^6/b
^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5
*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(2*d^5*sin(b*x + a) - (
sqrt(2)*(d^6/b^4)^(1/4)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*si
n(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) + (sqrt(2)*(d^6/b^4)^(1/4)*b
*d^8*cos(b*x + a) - sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*si
n(b*x + a)/cos(b*x + a)))/(d^10*sin(b*x + a))) - 5*sqrt(2)*(d^6/b^4)^(1/4)*
b*log(62500*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + 15625*d^10 +
31250*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d
^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) +
5*sqrt(2)*(d^6/b^4)^(1/4)*b*log(62500*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*si
n(b*x + a) + 15625*d^10 - 31250*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)
*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(
b*x + a)/cos(b*x + a))) + 16*(d*cos(b*x + a)^2 + 4*d)*sqrt(d*sin(b*x + a)/c
os(b*x + a)))/b
```

giac [A] time = 0.40, size = 226, normalized size = 0.91

$$-\frac{1}{16}\,d\left(\frac{10\,\sqrt{2}\,\sqrt{|d|}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{b}+\frac{10\,\sqrt{2}\,\sqrt{|d|}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{b}+\frac{5\,\sqrt{2}\,\sqrt{}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] -1/16*d*(10*sqrt(2)*sqrt(abs(d))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) +
 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b + 10*sqrt(2)*sqrt(abs(d))*arctan(-
1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b
 + 5*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x + a))
*sqrt(abs(d)) + abs(d))/b - 5*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) - sqr
t(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/b - 8*sqrt(d*tan(b*x + a))
*d^2/((d^2*tan(b*x + a)^2 + d^2)*b) - 32*sqrt(d*tan(b*x + a))/b)
```

maple [C] time = 0.42, size = 676, normalized size = 2.74

$$\frac{(-1+\cos(bx+a))\left(-5i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+}{\sin(bx+}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/8/b*(-1+cos(b*x+a))*(-5*I*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*(
(-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+
1/2*I,1/2*2^(1/2))+5*I*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I
,1/2*2^(1/2))+5*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2
+1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2)+5*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,
1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-
10*sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^
(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b
*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+2*cos(b*x+a)^3*2^
(1/2)-2*cos(b*x+a)^2*2^(1/2)+8*cos(b*x+a)*2^(1/2)-8*2^(1/2))*cos(b*x+a)*(co
s(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^5*2^(1/2)
```

maxima [A] time = 0.56, size = 204, normalized size = 0.83

$$-\frac{10\sqrt{2}\,d^{\frac{9}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+10\sqrt{2}\,d^{\frac{9}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+5\sqrt{2}\,d^{\frac{9}{2}}\log\left(d\tan(b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/16*(10*sqrt(2)*d^(9/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*ta
n(b*x + a)))/sqrt(d)) + 10*sqrt(2)*d^(9/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqr
t(d) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + 5*sqrt(2)*d^(9/2)*log(d*tan(b*x +
 a) + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 5*sqrt(2)*d^(9/2)*log(d*t
an(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 8*sqrt(d*tan(b*x
+ a))*d^6/(d^2*tan(b*x + a)^2 + d^2) - 32*sqrt(d*tan(b*x + a))*d^4)/(b*d^3)
```

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

$$\int \sin(a+b\,x)^2\,(d\tan(a+b\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(sin(a + b*x)^2*(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.66 $\int \csc^2(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=18

$$\frac{2d\sqrt{d\tan(a+bx)}}{b}$$

```
[Out] 2*d*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.04, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 30}

$$\frac{2d\sqrt{d\tan(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*d*Sqrt[d*Tan[a + b*x]])/b
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\begin{aligned}\int \csc^2(a+bx)(d\tan(a+bx))^{3/2}\,dx &= \frac{d\,\text{Subst}\left(\int \frac{1}{\sqrt{x}}\,dx, x, d\tan(a+bx)\right)}{b}\\ &= \frac{2d\sqrt{d\tan(a+bx)}}{b}\end{aligned}$$

Mathematica [A] time = 0.06, size = 18, normalized size = 1.00

$$\frac{2d\sqrt{d\tan(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*d*Sqrt[d*Tan[a + b*x]])/b
```

fricas [A] time = 0.43, size = 24, normalized size = 1.33

$$\frac{2\,d\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 2*d*sqrt(d*sin(b*x + a)/cos(b*x + a))/b
```

giac [A] time = 1.37, size = 16, normalized size = 0.89

$$\frac{2\sqrt{d\tan\left(bx+a\right)}\,d}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(d*tan(b*x + a))*d/b
```

maple [B] time = 0.50, size = 58, normalized size = 3.22

$$\frac{2\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}\cos\left(bx+a\right)\left(-1+\cos\left(bx+a\right)\right)^{2}\left(\cos\left(bx+a\right)+1\right)^{2}}{b\sin\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 2/b*(d*sin(b*x+a)/cos(b*x+a))^(3/2)*cos(b*x+a)*(-1+cos(b*x+a))^2*(cos(b*x+a
)+1)^2/sin(b*x+a)^5
```

maxima [A] time = 0.68, size = 23, normalized size = 1.28

$$\frac{2\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}{b\tan\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 2*(d*tan(b*x + a))^(3/2)/(b*tan(b*x + a))
```

mupad [B] time = 2.77, size = 43, normalized size = 2.39

$$\frac{2\,d\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/sin(a + b*x)^2,x)
```

```
[Out] (2*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/b
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.67 $\int \csc^4(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=41

$$\frac{2d\sqrt{d\tan(a+bx)}}{b}-\frac{2d^3}{3b(d\tan(a+bx))^{3/2}}$$

```
[Out] 2*d*(d*tan(b*x+a))^(1/2)/b-2/3*d^3/b/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 14}

$$\frac{2d\sqrt{d\tan(a+bx)}}{b}-\frac{2d^3}{3b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^4*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d^3)/(3*b*(d*Tan[a + b*x])^(3/2)) + (2*d*Sqrt[d*Tan[a + b*x]])/b
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^4(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{d\,\text{Subst}\left(\int \frac{d^2+x^2}{x^{5/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^2}{x^{5/2}}+\frac{1}{\sqrt{x}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^3}{3b(d\tan(a+bx))^{3/2}} + \frac{2d\sqrt{d\tan(a+bx)}}{b}$$

Mathematica [A] time = 0.08, size = 30, normalized size = 0.73

$$-\frac{2d\left(\csc^2(a+bx)-4\right)\sqrt{d\tan(a+bx)}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^4*(d*Tan[a + b*x])^(3/2),x]
[Out] (-2*d*(-4 + Csc[a + b*x]^2)*Sqrt[d*Tan[a + b*x]])/(3*b)
```

fricas [A] time = 0.45, size = 51, normalized size = 1.24

$$\frac{2\left(4\,d\cos\left(bx+a\right)^2-3\,d\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{3\left(b\cos\left(bx+a\right)^2-b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
[Out] 2/3*(4*d*cos(b*x + a)^2 - 3*d)*sqrt(d*sin(b*x + a)/cos(b*x + a))/(b*cos(b*x
 + a)^2 - b)
```

giac [A] time = 0.55, size = 43, normalized size = 1.05

$$\frac{2}{3}d\left(\frac{3\sqrt{d\tan\left(bx+a\right)}}{b}-\frac{d}{\sqrt{d\tan\left(bx+a\right)}\,b\tan\left(bx+a\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
[Out] 2/3*d*(3*sqrt(d*tan(b*x + a))/b - d/(sqrt(d*tan(b*x + a))*b*tan(b*x + a)))
```

maple [A] time = 0.56, size = 50, normalized size = 1.22

$$-\frac{2\left(4\left(\cos^{2}\left(bx+a\right)\right)-3\right)\cos\left(bx+a\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}}{3b\sin\left(bx+a\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^4*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -2/3/b*(4*cos(b*x+a)^2-3)*cos(b*x+a)*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*
x+a)^3
```

maxima [A] time = 0.59, size = 34, normalized size = 0.83

$$-\frac{2\,d^{3}\left(\frac{1}{\left(d\tan(bx+a)\right)^{\frac{3}{2}}}-\frac{3\sqrt{d\tan(bx+a)}}{d^{2}}\right)}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -2/3*d^3*(1/(d*tan(b*x + a))^(3/2) - 3*sqrt(d*tan(b*x + a))/d^2)/b
```

mupad [B] time = 3.49, size = 100, normalized size = 2.44

$$\frac{8\,d\,\sqrt{\frac{d\,\sin(2\,a+2\,b\,x)}{\cos(2\,a+2\,b\,x)+1}}\,\left(11\,\cos\left(2\,a+2\,b\,x\right)-5\,\cos\left(4\,a+4\,b\,x\right)+\cos\left(6\,a+6\,b\,x\right)-7\right)}{3\,b\,\left(15\,\cos\left(2\,a+2\,b\,x\right)-6\,\cos\left(4\,a+4\,b\,x\right)+\cos\left(6\,a+6\,b\,x\right)-10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/sin(a + b*x)^4,x)
```

```
[Out] (8*d*((d*sin(2*a + 2*b*x))/(cos(2*a + 2*b*x) + 1))^(1/2)*(11*cos(2*a + 2*b*
x) - 5*cos(4*a + 4*b*x) + cos(6*a + 6*b*x) - 7))/(3*b*(15*cos(2*a + 2*b*x)
- 6*cos(4*a + 4*b*x) + cos(6*a + 6*b*x) - 10))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**4*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.68 $\int \csc^6(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=63

$$-\frac{2d^5}{7b(d\tan(a+bx))^{7/2}}-\frac{4d^3}{3b(d\tan(a+bx))^{3/2}}+\frac{2d\sqrt{d\tan(a+bx)}}{b}$$

```
[Out] 2*d*(d*tan(b*x+a))^(1/2)/b-2/7*d^5/b/(d*tan(b*x+a))^(7/2)-4/3*d^3/b/(d*tan(
b*x+a))^(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 270}

$$-\frac{2d^5}{7b(d\tan(a+bx))^{7/2}}-\frac{4d^3}{3b(d\tan(a+bx))^{3/2}}+\frac{2d\sqrt{d\tan(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^6*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d^5)/(7*b*(d*Tan[a + b*x])^(7/2)) - (4*d^3)/(3*b*(d*Tan[a + b*x])^(3/2)
) + (2*d*Sqrt[d*Tan[a + b*x]])/b
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^6(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{d\,\text{Subst}\left(\int \frac{(d^2+x^2)^2}{x^{9/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^4}{x^{9/2}}+\frac{2d^2}{x^{5/2}}+\frac{1}{\sqrt{x}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^5}{7b(d\tan(a+bx))^{7/2}} - \frac{4d^3}{3b(d\tan(a+bx))^{3/2}} + \frac{2d\sqrt{d\tan(a+bx)}}{b}$$

Mathematica [A] time = 0.15, size = 42, normalized size = 0.67

$$-\frac{2d\left(3\csc^4(a+bx)+8\csc^2(a+bx)-32\right)\sqrt{d\tan(a+bx)}}{21b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^6*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d*(-32 + 8*Csc[a + b*x]^2 + 3*Csc[a + b*x]^4)*Sqrt[d*Tan[a + b*x]])/(21
*b)
```

fricas [A] time = 0.49, size = 71, normalized size = 1.13

$$\frac{2\left(32\,d\cos(bx+a)^4-56\,d\cos(bx+a)^2+21\,d\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{21\left(b\cos(bx+a)^4-2\,b\cos(bx+a)^2+b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 2/21*(32*d*cos(b*x + a)^4 - 56*d*cos(b*x + a)^2 + 21*d)*sqrt(d*sin(b*x + a)
/cos(b*x + a))/(b*cos(b*x + a)^4 - 2*b*cos(b*x + a)^2 + b)
```

giac [A] time = 0.60, size = 64, normalized size = 1.02

$$\frac{2}{21}\,d\left(\frac{21\sqrt{d\tan(bx+a)}}{b}-\frac{14\,d^4\tan(bx+a)^2+3\,d^4}{\sqrt{d\tan(bx+a)}\,bd^3\tan(bx+a)^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 2/21*d*(21*sqrt(d*tan(b*x + a))/b - (14*d^4*tan(b*x + a)^2 + 3*d^4)/(sqrt(d
*tan(b*x + a))*b*d^3*tan(b*x + a)^3))
```

maple [A] time = 0.59, size = 60, normalized size = 0.95

$$\frac{2\left(32\left(\cos^4(bx+a)\right)-56\left(\cos^2(bx+a)\right)+21\right)\cos(bx+a)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}}{21b\sin(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^6*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 2/21/b*(32*cos(b*x+a)^4-56*cos(b*x+a)^2+21)*cos(b*x+a)*(d*sin(b*x+a)/cos(b*
x+a))^(3/2)/sin(b*x+a)^5
```

maxima [A] time = 0.47, size = 58, normalized size = 0.92

$$\frac{2\,d^5\left(\frac{21\,\sqrt{d\tan(bx+a)}}{d^4}-\frac{14\,d^2\tan(bx+a)^2+3\,d^2}{(d\tan(bx+a))^{\frac{7}{2}}d^2}\right)}{21\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 2/21*d^5*(21*sqrt(d*tan(b*x + a))/d^4 - (14*d^2*tan(b*x + a)^2 + 3*d^2)/((d
*tan(b*x + a))^(7/2)*d^2))/b
```

mupad [B] time = 5.88, size = 292, normalized size = 4.63

$$-\frac{\left(\frac{20\,d}{21\,b}-\frac{64\,d\,e^{a\,2i+b\,x\,2i}}{21\,b}\right)\sqrt{-\frac{d\left(e^{a\,2i+b\,x\,2i}\,1i-i\right)}{e^{a\,2i+b\,x\,2i}+1}}}{e^{a\,2i+b\,x\,2i}-1}+\frac{20\,d\,\left(e^{a\,2i+b\,x\,2i}+1\right)\sqrt{-\frac{d\left(e^{a\,2i+b\,x\,2i}\,1i-i\right)}{e^{a\,2i+b\,x\,2i}+1}}}{21\,b\left(e^{a\,2i+b\,x\,2i}-1\right)^2}-\frac{24\,d\,\left(e^{a\,2i+b\,x\,2i}+1\right)\sqrt{-\frac{d\left(e^{a\,2i}\right.}{e^{a\,2i}}}}{7\,b\left(e^{a\,2i+b\,x\,2i}-1\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/sin(a + b*x)^6,x)
```

```
[Out] (20*d*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i
 + b*x*2i) + 1))^(1/2))/(21*b*(exp(a*2i + b*x*2i) - 1)^2) - (((20*d)/(21*b)
 - (64*d*exp(a*2i + b*x*2i))/(21*b))*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(ex
p(a*2i + b*x*2i) + 1))^(1/2))/(exp(a*2i + b*x*2i) - 1) - (24*d*(exp(a*2i +
b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(
1/2))/(7*b*(exp(a*2i + b*x*2i) - 1)^3) - (16*d*(exp(a*2i + b*x*2i) + 1)*(-(
```

```
d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(7*b*(exp(
a*2i + b*x*2i) - 1)^4)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**6*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.69 $\int \sin^3(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=110

$$\frac{7d^3\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}-\frac{7d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{2d\sin^3(a+bx)\sqrt{d\tan(a+bx)}}{b}$$

```
[Out] 7/2*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*P
i+b*x),2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)+2*d*
sin(b*x+a)^3*(d*tan(b*x+a))^(1/2)/b+7/3*d^3*sin(b*x+a)^3/b/(d*tan(b*x+a))^(
3/2)
```

Rubi [A] time = 0.14, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2594, 2598, 2601, 2572, 2639}

$$\frac{7d^3\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}-\frac{7d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{2d\sin^3(a+bx)\sqrt{d\tan(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (7*d^3*Sin[a + b*x]^3)/(3*b*(d*Tan[a + b*x])^(3/2)) - (7*d^2*EllipticE[a -
Pi/4 + b*x, 2]*Sin[a + b*x])/(2*b*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x
]]) + (2*d*Sin[a + b*x]^3*Sqrt[d*Tan[a + b*x]])/b
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2594

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
n - 1)), x] - Dist[(b^2*(m + n - 1))/(n - 1), Int[(a*Sin[e + f*x])^m*(b*Tan
[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] && Int
egersQ[2*m, 2*n] &&  !(GtQ[m, 1] &&  !IntegerQ[(m - 1)/2])
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
```

```
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \sin^3(a+bx)(d\tan(a+bx))^{3/2}\,dx &= \frac{2d\sin^3(a+bx)\sqrt{d\tan(a+bx)}}{b}-\left(7d^2\right)\int \frac{\sin^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx\\ &= \frac{7d^3\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}+\frac{2d\sin^3(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{1}{2}\left(7d^2\right)\int \frac{\sin}{\sqrt{d\tan}}\cdots\\ &= \frac{7d^3\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}+\frac{2d\sin^3(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{\left(7d^2\sqrt{\sin(a+b\cdots}\right.}{2\sqrt{\cos\cdots}}\\ &= \frac{7d^3\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}+\frac{2d\sin^3(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{\left(7d^2\sin(a+bx)\cdots\right.}{2\sqrt{\sin(2a+2\cdots}}\\ &= \frac{7d^3\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}-\frac{7d^2E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{2b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{2d\sin^3(a+b\cdots}{\cdots}\end{aligned}$$

Mathematica [C] time = 0.60, size = 90, normalized size = 0.82

$$\frac{(d\tan(a+bx))^{3/2}\left(2\cos(a+bx)(\cos(2(a+bx))+13)\sqrt{\sec^2(a+bx)}-28\sec(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx\cdots\right.\right.}{12b\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] ((-28*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x] + 2*Co
s[a + b*x]*(13 + Cos[2*(a + b*x)])*Sqrt[Sec[a + b*x]^2])*(d*Tan[a + b*x])^(
3/2))/(12*b*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(d\cos\left(bx+a\right)^{2}-d\right)\sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)\tan\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(d*cos(b*x + a)^2 - d)*sqrt(d*tan(b*x + a))*sin(b*x + a)*tan(b*x
+ a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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le to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-
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```
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heck sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/
2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)ext_reduce Error: Bad Argumen
t Typeext_reduce Error: Bad Argument TypeEvaluation time: 16.39Done
```

maple [B] time = 0.47, size = 540, normalized size = 4.91

$$-\frac{(-1+\cos(bx+a))^2\left(2\left(\cos^4(bx+a)\right)\sqrt{2}-42\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\ \mathrm{co}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/12/b*(-1+cos(b*x+a))^2*(2*cos(b*x+a)^4*2^(1/2)-42*((-1+cos(b*x+a))/sin(b
*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticE(((1-cos(b*x+a)+sin(b*x+a)
)/sin(b*x+a))^(1/2),1/2*2^(1/2))+21*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1
+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*
x+a))^(1/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2),1/2*2^(1/2))-42*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b
*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*Ellip
ticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+21*((-1+cos(
b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1
-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-11*cos(b*x+a)^2*2^(1/2)+21*cos(b*x+a)*2^
(1/2)-12*2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(3/
2)/sin(b*x+a)^6*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}}\sin(bx+a)^3\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sin(b*x + a)^3, x)
```

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

$$\int \sin\left(a+b\,x\right)^3\,{\left(d\,\tan\left(a+b\,x\right)\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(sin(a + b*x)^3*(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.70 $\int \sin(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=76

$$\frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{3d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

```
[Out] 3*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+
b*x),2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)+2*d*si
n(b*x+a)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.09, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2594, 2601, 2572, 2639}

$$\frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{3d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-3*d^2*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(b*Sqrt[Sin[2*a + 2*b*x]
]*Sqrt[d*Tan[a + b*x]]) + (2*d*Sin[a + b*x]*Sqrt[d*Tan[a + b*x]])/b
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2594

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
n - 1)), x] - Dist[(b^2*(m + n - 1))/(n - 1), Int[(a*Sin[e + f*x])^m*(b*Tan
[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] && Int
egersQ[2*m, 2*n] &&  !(GtQ[m, 1] &&  !IntegerQ[(m - 1)/2])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
```

```
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \sin(a+bx)(d\tan(a+bx))^{3/2}\,dx &= \frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}-\left(3d^2\right)\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx \\
&= \frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{\left(3d^2\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\,\sqrt{\sin(a}{\sqrt{\cos(a+bx)}\,\sqrt{d\tan(a+bx)}} \\
&= \frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{\left(3d^2\sin(a+bx)\right)\int \sqrt{\sin(2a+2bx)}\,dx}{\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+bx)}} \\
&= -\frac{3d^2E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{b\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+bx)}}+\frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}
\end{aligned}
$$

Mathematica [C] time = 0.29, size = 58, normalized size = 0.76

$$
-\frac{2\cos(a+bx)(d\tan(a+bx))^{3/2}\left(\sqrt{\sec^2(a+bx)}\;{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)-1\right)}{b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Cos[a + b*x]*(-1 + Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sq
rt[Sec[a + b*x]^2])*(d*Tan[a + b*x])^(3/2))/b
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d\sin\left(bx+a\right)\tan\left(bx+a\right),x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*sin(b*x + a)*tan(b*x + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check si
gn: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unabl
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*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x
/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/
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i/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*
pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to ch
eck sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2
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2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check s
ign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unab
le to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-
2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign:
(2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
 check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/
x/2)ext_reduce Error: Bad Argument Typeext_reduce Error: Bad Argument TypeE
valuation time: 16.49Done
```

maple [B] time = 0.43, size = 526, normalized size = 6.92

$$\frac{(-1+\cos(bx+a))^2\left(6\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\cos(bx+a)\,\mathrm{EllipticE}\left(\sqrt{\frac{1-}{}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/2/b*(-1+cos(b*x+a))^2*(6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+
a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2)*cos(b*x+a)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^
(1/2))-3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Elli
pticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+6*((-1+cos(
b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1
-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-
1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b
*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(
1/2))+cos(b*x+a)^2*2^(1/2)-3*cos(b*x+a)*2^(1/2)+2*2^(1/2))*cos(b*x+a)*(cos(
b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^6*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}}\sin(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sin(b*x + a), x)
```

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

$$\int \sin(a+b\,x)\,\left(d\tan(a+b\,x)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(sin(a + b*x)*(d*tan(a + b*x))^(3/2), x)
```

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

$$\int (d\tan(a+bx))^{\frac{3}{2}}\sin(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(3/2)*sin(a + b*x), x)
```

3.71 $\int \csc(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=76

$$\frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{2d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

```
[Out] 2*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+
b*x),2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)+2*d*si
n(b*x+a)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.09, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2593, 2601, 2572, 2639}

$$\frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}-\frac{2d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d^2*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(b*Sqrt[Sin[2*a + 2*b*x]
]*Sqrt[d*Tan[a + b*x]]) + (2*d*Sin[a + b*x]*Sqrt[d*Tan[a + b*x]])/b
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2593

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1))
/(a^2*f*(n - 1)), x] - Dist[(b^2*(m + 2))/(a^2*(n - 1)), Int[(a*Sin[e + f*x
])^(m + 2)*(b*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && Gt
Q[n, 1] && (LtQ[m, -1] || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*
n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \csc(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b} - \left(2d^2\right)\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

$$= \frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b} - \frac{\left(2d^2\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\,\sqrt{\sin(a}}{\sqrt{\cos(a+bx)}\,\sqrt{d\tan(a+bx)}}$$

$$= \frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b} - \frac{\left(2d^2\sin(a+bx)\right)\int \sqrt{\sin(2a+2bx)}\,dx}{\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+bx)}}$$

$$= -\frac{2d^2E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{b\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+bx)}} + \frac{2d\sin(a+bx)\sqrt{d\tan(a+bx)}}{b}$$

Mathematica [C] time = 0.29, size = 61, normalized size = 0.80

$$-\frac{2\cos(a+bx)(d\tan(a+bx))^{3/2}\left(2\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)-3\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Cos[a + b*x]*(-3 + 2*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*
Sqrt[Sec[a + b*x]^2])*(d*Tan[a + b*x])^(3/2))/(3*b)
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{d\tan(bx+a)}\,d\csc(bx+a)\tan(bx+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*csc(b*x + a)*tan(b*x + a), x)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}} \csc(bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*csc(b*x + a), x)
```

maple [B] time = 0.49, size = 511, normalized size = 6.72

$$(-1+\cos(bx+a))^2 \left(2\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\cos(bx+a)\,\mathrm{EllipticE}\left(\sqrt{\frac{1-}{}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/b*(-1+cos(b*x+a))^2*(2*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)
+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)
*cos(b*x+a)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1
/2))-((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x
+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Elliptic
F(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+2*((-1+cos(b*x+
a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/
sin(b*x+a))^(1/2),1/2*2^(1/2))-((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-
cos(b*x+a)*2^(1/2)+2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b
*x+a))^(3/2)/sin(b*x+a)^6*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}} \csc(bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*csc(b*x + a), x)
```

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

$$\int \frac{(d \tan (a + b\, x))^{3/2}}{\sin (a + b\, x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/sin(a + b*x),x)
[Out] int((d*tan(a + b*x))^(3/2)/sin(a + b*x), x)
```

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

$$\int (d \tan (a + bx))^{\frac{3}{2}} \csc (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))**(3/2),x)
[Out] Integral((d*tan(a + b*x))**(3/2)*csc(a + b*x), x)
```

3.72 $\int \csc^3(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=102

$$-\frac{4d^2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}}-\frac{4d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{2d\csc(a+bx)\sqrt{d\tan(a+bx)}}{b}$$

```
[Out] -4*d^2*cos(b*x+a)/b/(d*tan(b*x+a))^(1/2)+4*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/
sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*sin(b*x+a)/b/sin(2*b
*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)+2*d*csc(b*x+a)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.14, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2593, 2601, 2570, 2572, 2639}

$$-\frac{4d^2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}}-\frac{4d^2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{2d\csc(a+bx)\sqrt{d\tan(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-4*d^2*Cos[a + b*x])/(b*Sqrt[d*Tan[a + b*x]]) - (4*d^2*EllipticE[a - Pi/4
+ b*x, 2]*Sin[a + b*x])/(b*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]]) + (
2*d*Csc[a + b*x]*Sqrt[d*Tan[a + b*x]])/b
```

Rule 2570

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[((b*Cos[e + f*x])^(n + 1)*(a*Sin[e + f*x])^(m + 1))/(
a*b*f*(m + 1)), x] + Dist[(m + n + 2)/(a^2*(m + 1)), Int[(b*Cos[e + f*x])^n
*(a*Sin[e + f*x])^(m + 2), x], x] /; FreeQ[{a, b, e, f, n}, x] && LtQ[m, -1
] && IntegersQ[2*m, 2*n]
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2593

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1))
/(a^2*f*(n - 1)), x] - Dist[(b^2*(m + 2))/(a^2*(n - 1)), Int[(a*Sin[e + f*x
```

```
])^(m + 2)*(b*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && Gt
Q[n, 1] && (LtQ[m, -1] || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*
n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \csc^3(a+bx)(d\tan(a+bx))^{3/2}\,dx &= \frac{2d\csc(a+bx)\sqrt{d\tan(a+bx)}}{b} + \left(2d^2\right)\int \frac{\csc(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx \\
&= \frac{2d\csc(a+bx)\sqrt{d\tan(a+bx)}}{b} + \frac{\left(2d^2\sqrt{\sin(a+bx)}\right)\int \frac{\sqrt{\cos(a+bx)}}{\sin^{\frac{3}{2}}(a+bx)}\,dx}{\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}} \\
&= -\frac{4d^2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}} + \frac{2d\csc(a+bx)\sqrt{d\tan(a+bx)}}{b} - \frac{\left(4d^2\sqrt{\sin(a+bx)}\right)\ldots}{\sqrt{\cos(a\ldots}} \\
&= -\frac{4d^2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}} + \frac{2d\csc(a+bx)\sqrt{d\tan(a+bx)}}{b} - \frac{\left(4d^2\sin(a+bx)\right)\int\ldots}{\sqrt{\sin(2a+2bx)}\ldots} \\
&= -\frac{4d^2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}} - \frac{4d^2E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}} + \frac{2d\csc(a+bx)\sqrt{\ldots}}{b}
\end{aligned}$$

Mathematica [C] time = 0.59, size = 71, normalized size = 0.70

$$-\frac{2\cos(a+bx)(d\tan(a+bx))^{3/2}\left(4\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+3\csc^2(a+bx)-6\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Cos[a + b*x]*(-6 + 3*Csc[a + b*x]^2 + 4*Hypergeometric2F1[3/4, 3/2, 7/4
, -Tan[a + b*x]^2]*Sqrt[Sec[a + b*x]^2])*(d*Tan[a + b*x])^(3/2))/(3*b)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d\csc\left(bx+a\right)^{3}\tan\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*csc(b*x + a)^3*tan(b*x + a), x)
```

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

$$\int \left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}\csc\left(bx+a\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*csc(b*x + a)^3, x)
```

maple [B] time = 0.57, size = 491, normalized size = 4.81

$$\frac{\left(4\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\cos\left(bx+a\right)\text{EllipticE}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^3*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/b*(4*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b
*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Ellipt
icE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*((-1+cos(b*
x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+a)
+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+4*((-1+cos(b*x+a))/sin(b*x+a))^
(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
),1/2*2^(1/2))-2*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*Ellipti
cF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*cos(b*x+a)*2
```

```
^(1/2)+2^(1/2))*cos(b*x+a)*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^2*2^(
1/2)
```

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

$$\int (d\tan (bx+a))^{\frac{3}{2}}\csc (bx+a)^3\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*csc(b*x + a)^3, x)
```

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

$$\int \frac{(d\tan (a+b\,x))^{3/2}}{\sin (a+b\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/sin(a + b*x)^3,x)
```

```
[Out] int((d*tan(a + b*x))^(3/2)/sin(a + b*x)^3, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.73 $\int \sin^4(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=277

$$\frac{77d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b}-\frac{77d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b}-\frac{77d^{5/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a\right.}{64\sqrt{2}\,b}$$

```
[Out] 77/64*d^(5/2)*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-77/6
4*d^(5/2)*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-77/128*d
^(5/2)*ln(d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2
)+77/128*d^(5/2)*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a)
)/b*2^(1/2)+77/48*d*(d*tan(b*x+a))^(3/2)/b-11/16*cos(b*x+a)^2*(d*tan(b*x+a)
)^(7/2)/b/d-1/4*cos(b*x+a)^4*(d*tan(b*x+a))^(11/2)/b/d^3
```

Rubi [A] time = 0.19, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {2591, 288, 321, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{77d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b}-\frac{77d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b}-\frac{77d^{5/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a\right.}{64\sqrt{2}\,b}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^4*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (77*d^(5/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]
*b) - (77*d^(5/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*S
qrt[2]*b) - (77*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d
*Tan[a + b*x]]])/(64*Sqrt[2]*b) + (77*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a +
 b*x] + Sqrt[2]*Sqrt[d*Tan[a + b*x]]])/(64*Sqrt[2]*b) + (77*d*(d*Tan[a + b*
x])^(3/2))/(48*b) - (11*Cos[a + b*x]^2*(d*Tan[a + b*x])^(7/2))/(16*b*d) - (
Cos[a + b*x]^4*(d*Tan[a + b*x])^(11/2))/(4*b*d^3)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
```

```
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^4(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{d\,\mathrm{Subst}\left(\int \frac{x^{13/2}}{(d^2+x^2)^3}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^4(a+bx)(d\tan(a+bx))^{11/2}}{4bd^3} + \frac{(11d)\,\mathrm{Subst}\left(\int \frac{x^{9/2}}{(d^2+x^2)^2}\,dx, x, d\tan(a+\right.}{8b}$$

$$= -\frac{11\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{11/2}}{4bd^3} + \frac{(77}{}$$

$$= \frac{77d(d\tan(a+bx))^{3/2}}{48b} - \frac{11\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{16bd} - \frac{\cos^4(a+bx)(d}{4}$$

$$= \frac{77d(d\tan(a+bx))^{3/2}}{48b} - \frac{11\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{16bd} - \frac{\cos^4(a+bx)(d}{4}$$

$$= \frac{77d(d\tan(a+bx))^{3/2}}{48b} - \frac{11\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{16bd} - \frac{\cos^4(a+bx)(d}{4}$$

$$= \frac{77d(d\tan(a+bx))^{3/2}}{48b} - \frac{11\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{16bd} - \frac{\cos^4(a+bx)(d}{4}$$

$$= -\frac{77d^{5/2}\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{64\sqrt{2}\,b} + \frac{77d^{5/2}\log\left(\sqrt{\right.}{}$$

$$= \frac{77d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b} - \frac{77d^{5/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b} - \frac{77d}{}$$

Mathematica [A] time = 0.58, size = 142, normalized size = 0.51

$$\frac{d(d\tan(a+bx))^{3/2}\left(204\cos^2(a+bx) - 6\sin(4(a+bx))\cot(a+bx) + 231\sqrt{\sin(2(a+bx))}\cot(a+bx)\csc(a+bx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^4*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (d*(128 + 204*Cos[a + b*x]^2 + 231*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Cot[
a + b*x]*Csc[a + b*x]*Sqrt[Sin[2*(a + b*x)]] + 231*Cot[a + b*x]*Csc[a + b*x
]*Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*x)]]]*Sqrt[Sin[2*(a +
 b*x)]] - 6*Cot[a + b*x]*Sin[4*(a + b*x)])*(d*Tan[a + b*x])^(3/2))/(192*b)
```

fricas [B] time = 114.52, size = 1997, normalized size = 7.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] 1/1536*(924*sqrt(2)*(d^10/b^4)^(1/4)*b*arctan((sqrt(d^16 + 4*sqrt(d^10/b^4)
*b^2*d^11*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*co
s(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*
sqrt(d*sin(b*x + a)/cos(b*x + a)))*(2*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(
d^10/b^4)*b^2*d^3 + (sqrt(2)*(d^10/b^4)^(1/4)*b*d^5*cos(b*x + a)*sin(b*x +
a) + sqrt(2)*(d^10/b^4)^(3/4)*b^3*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b
*x + a))) - (sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10
/b^4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x
+ a)))/(2*d^16*cos(b*x + a)^2 - d^16))*cos(b*x + a) + 924*sqrt(2)*(d^10/b^4
)^(1/4)*b*arctan(-(sqrt(d^16 + 4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b
*x + a) + 2*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10
/b^4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x
+ a)))*(2*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(d^10/b^4)*b^2*d^3 - (sqrt(2)
*(d^10/b^4)^(1/4)*b*d^5*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4
)*b^3*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) + (sqrt(2)*(d^10/b
^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x
+ a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*d^16*cos(b*x + a)^
2 - d^16))*cos(b*x + a) - 924*sqrt(2)*(d^10/b^4)^(1/4)*b*arctan(-1/2*(2*d^1
6*sin(b*x + a) - sqrt(d^16 + 4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x
 + a) + 2*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b
^4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x +
a)))*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^5*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4
)*b^3*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^11*cos(b*x
 + a)^3 - b^2*d^11*cos(b*x + a))*sqrt(d^10/b^4) + (sqrt(2)*(d^10/b^4)^(1/4)
*b*d^13*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a))*sqrt(
d*sin(b*x + a)/cos(b*x + a)))/((2*d^16*cos(b*x + a)^2 - d^16)*sin(b*x + a))
)*cos(b*x + a) - 924*sqrt(2)*(d^10/b^4)^(1/4)*b*arctan(1/2*(2*d^16*sin(b*x
+ a) + sqrt(d^16 + 4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) - 2*
(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*
b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt
(2)*(d^10/b^4)^(1/4)*b*d^5*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4)*b^3*cos(
b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^11*cos(b*x + a)^3 -
b^2*d^11*cos(b*x + a))*sqrt(d^10/b^4) - (sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*si
n(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a))*sqrt(d*sin(b*x
+ a)/cos(b*x + a)))/((2*d^16*cos(b*x + a)^2 - d^16)*sin(b*x + a)))*cos(b*x
+ a) + 231*sqrt(2)*(d^10/b^4)^(1/4)*b*cos(b*x + a)*log(208422380089*d^16 +
833689520356*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) + 4168447601
```

```
78*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/
4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) -
231*sqrt(2)*(d^10/b^4)^(1/4)*b*cos(b*x + a)*log(208422380089*d^16 + 8336895
20356*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) - 416844760178*(sqr
t(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*
d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) + 231*sqr
t(2)*(d^10/b^4)^(1/4)*b*cos(b*x + a)*log(208422380089/16*d^16 + 20842238008
9/4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) + 208422380089/8*(sqr
t(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*
d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) - 231*sqr
t(2)*(d^10/b^4)^(1/4)*b*cos(b*x + a)*log(208422380089/16*d^16 + 20842238008
9/4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) - 208422380089/8*(sqr
t(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*
d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) - 32*(12*
d^2*cos(b*x + a)^4 - 57*d^2*cos(b*x + a)^2 - 32*d^2)*sqrt(d*sin(b*x + a)/co
s(b*x + a))*sin(b*x + a))/(b*cos(b*x + a))
```

giac [A] time = 3.29, size = 278, normalized size = 1.00

$$-\frac{1}{384}\,d^2\left(\frac{462\,\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{bd}+\frac{462\,\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{bd}-\frac{231\,\sqrt{}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] -1/384*d^2*(462*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d
)) + 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d) + 462*sqrt(2)*abs(d)^(3/2)
*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(a
bs(d)))/(b*d) - 231*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) + sqrt(2)*sqrt(
d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d) + 231*sqrt(2)*abs(d)^(3/2)*log
(d*tan(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d)
 - 256*sqrt(d*tan(b*x + a))*tan(b*x + a)/b - 24*(19*sqrt(d*tan(b*x + a))*d^
4*tan(b*x + a)^3 + 15*sqrt(d*tan(b*x + a))*d^4*tan(b*x + a))/((d^2*tan(b*x
+ a)^2 + d^2)^2*b))
```

maple [C] time = 0.51, size = 590, normalized size = 2.13

$$\frac{(-1+\cos(bx+a))\left(231i\cos(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\mathrm{EllipticPi}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^4*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/192/b*(-1+cos(b*x+a))*(231*I*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2
)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/
sin(b*x+a))^(1/2)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1
/2-1/2*I,1/2*2^(1/2))-231*I*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*(
(-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+
1/2*I,1/2*2^(1/2))-24*2^(1/2)*cos(b*x+a)^5+24*cos(b*x+a)^4*2^(1/2)-231*cos(
b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b
*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi(((1-co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))-231*cos(b*x+a
)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a)
)^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi(((1-cos(b*x
+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))+114*cos(b*x+a)^3*2
^(1/2)-114*cos(b*x+a)^2*2^(1/2)+64*cos(b*x+a)*2^(1/2)-64*2^(1/2))*cos(b*x+a
)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)^5*2^(1/2)
```

maxima [A] time = 0.59, size = 240, normalized size = 0.87

$$-\frac{231\,d^8\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(d\tan(bx+a)+\sqrt{2}\,\sqrt{d\tan(bx+a)}\,\sqrt{d}+\cdots\right.}{\sqrt{d}}\right.}{384\,b\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] -1/384*(231*d^8*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*t
an(b*x + a)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqr
t(d) - 2*sqrt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(b*x + a
) + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(b
*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d)) - 256*(d*tan(b
*x + a))^(3/2)*d^6 - 24*(19*(d*tan(b*x + a))^(7/2)*d^8 + 15*(d*tan(b*x + a)
)^(3/2)*d^10)/(d^4*tan(b*x + a)^4 + 2*d^4*tan(b*x + a)^2 + d^4))/(b*d^5)
```

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

$$\int \sin\left(a+b\,x\right)^4\,{\left(d\,\tan\left(a+b\,x\right)\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^4*(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)^4*(d*tan(a + b*x))^(5/2), x)
```

<u>**sympy**</u> **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**4*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.74 $\int \sin^2(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=247

$$\frac{7d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}-\frac{7d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}-\frac{7d^{5/2}\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+b}\right.}{8\sqrt{2}\,b}$$

```
[Out] 7/8*d^(5/2)*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-7/8*d^
(5/2)*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-7/16*d^(5/2)
*ln(d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)+7/16
*d^(5/2)*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1
/2)+7/6*d*(d*tan(b*x+a))^(3/2)/b-1/2*cos(b*x+a)^2*(d*tan(b*x+a))^(7/2)/b/d
```

Rubi [A] time = 0.18, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {2591, 288, 321, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{7d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}-\frac{7d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}-\frac{7d^{5/2}\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+b}\right.}{8\sqrt{2}\,b}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (7*d^(5/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*b
) - (7*d^(5/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[
2]*b) - (7*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[
a + b*x]]])/(8*Sqrt[2]*b) + (7*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] +
 Sqrt[2]*Sqrt[d*Tan[a + b*x]]])/(8*Sqrt[2]*b) + (7*d*(d*Tan[a + b*x])^(3/2)
)/(6*b) - (Cos[a + b*x]^2*(d*Tan[a + b*x])^(7/2))/(2*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
```

```
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^2(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{d\,\text{Subst}\left(\int \frac{x^{9/2}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{2bd} + \frac{(7d)\,\text{Subst}\left(\int \frac{x^{5/2}}{d^2+x^2}\,dx, x, d\tan(a+bx\right.}{4b}$$

$$= \frac{7d(d\tan(a+bx))^{3/2}}{6b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{2bd} - \frac{\left(7d^3\right)\text{Subst}\left(\int \frac{}{d}\right.}{}$$

$$= \frac{7d(d\tan(a+bx))^{3/2}}{6b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{2bd} - \frac{\left(7d^3\right)\text{Subst}\left(\int \frac{}{d}\right.}{}$$

$$= \frac{7d(d\tan(a+bx))^{3/2}}{6b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{2bd} + \frac{\left(7d^3\right)\text{Subst}\left(\int \frac{}{d}\right.}{}$$

$$= \frac{7d(d\tan(a+bx))^{3/2}}{6b} - \frac{\cos^2(a+bx)(d\tan(a+bx))^{7/2}}{2bd} - \frac{\left(7d^{5/2}\right)\text{Subst}\left(\int\right.}{}$$

$$= -\frac{7d^{5/2}\log\left(\sqrt{d}+\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}\,b} + \frac{7d^{5/2}\log\left(\sqrt{d}\right.}{}$$

$$= \frac{7d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} - \frac{7d^{5/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} - \frac{7d^{5/}}{}$$

Mathematica [A] time = 0.41, size = 126, normalized size = 0.51

$$\frac{d(d\tan(a+bx))^{3/2}\left(12\cos^2(a+bx)+21\sqrt{\sin(2(a+bx))}\cot(a+bx)\csc(a+bx)\sin^{-1}(\cos(a+bx)-\sin(a+bx)\right.}{24b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (d*(16 + 12*Cos[a + b*x]^2 + 21*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Cot[a +
 b*x]*Csc[a + b*x]*Sqrt[Sin[2*(a + b*x)]] + 21*Cot[a + b*x]*Csc[a + b*x]*Lo
g[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*x)]]]*Sqrt[Sin[2*(a + b*x
)]])*(d*Tan[a + b*x])^(3/2))/(24*b)
```

fricas [B] time = 111.83, size = 1984, normalized size = 8.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] 1/192*(84*sqrt(2)*(d^10/b^4)^(1/4)*b*arctan((sqrt(d^16 + 4*sqrt(d^10/b^4)*b
^2*d^11*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(
b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sq
rt(d*sin(b*x + a)/cos(b*x + a)))*(2*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(d^
10/b^4)*b^2*d^3 + (sqrt(2)*(d^10/b^4)^(1/4)*b*d^5*cos(b*x + a)*sin(b*x + a)
 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x
 + a))) - (sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b
^4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x +
a)))/(2*d^16*cos(b*x + a)^2 - d^16))*cos(b*x + a) + 84*sqrt(2)*(d^10/b^4)^(
1/4)*b*arctan(-(sqrt(d^16 + 4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x
+ a) + 2*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^
4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a
)))*(2*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(d^10/b^4)*b^2*d^3 - (sqrt(2)*(d
^10/b^4)^(1/4)*b*d^5*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4)*b
^3*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))) + (sqrt(2)*(d^10/b^4)
^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a
)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*d^16*cos(b*x + a)^2 -
 d^16))*cos(b*x + a) - 84*sqrt(2)*(d^10/b^4)^(1/4)*b*arctan(-1/2*(2*d^16*si
n(b*x + a) - sqrt(d^16 + 4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a
) + 2*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^
(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))
*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^5*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4)*b^
3*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^11*cos(b*x + a
)^3 - b^2*d^11*cos(b*x + a))*sqrt(d^10/b^4) + (sqrt(2)*(d^10/b^4)^(1/4)*b*d
```

```
^13*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a))*sqrt(d*si
n(b*x + a)/cos(b*x + a)))/((2*d^16*cos(b*x + a)^2 - d^16)*sin(b*x + a)))*co
s(b*x + a) - 84*sqrt(2)*(d^10/b^4)^(1/4)*b*arctan(1/2*(2*d^16*sin(b*x + a)
+ sqrt(d^16 + 4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) - 2*(sqrt
(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d
^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt(2)*(
d^10/b^4)^(1/4)*b*d^5*sin(b*x + a) + sqrt(2)*(d^10/b^4)^(3/4)*b^3*cos(b*x +
 a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^11*cos(b*x + a)^3 - b^2*d
^11*cos(b*x + a))*sqrt(d^10/b^4) - (sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*sin(b*x
 + a) + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a))*sqrt(d*sin(b*x + a)/
cos(b*x + a)))/((2*d^16*cos(b*x + a)^2 - d^16)*sin(b*x + a)))*cos(b*x + a)
+ 21*sqrt(2)*(d^10/b^4)^(1/4)*b*cos(b*x + a)*log(117649*d^16 + 470596*sqrt(
d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) + 235298*(sqrt(2)*(d^10/b^4)^(
1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a)*
sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) - 21*sqrt(2)*(d^10/b^4)^(1
/4)*b*cos(b*x + a)*log(117649*d^16 + 470596*sqrt(d^10/b^4)*b^2*d^11*cos(b*x
 + a)*sin(b*x + a) - 235298*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2
 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b
*x + a)/cos(b*x + a))) + 21*sqrt(2)*(d^10/b^4)^(1/4)*b*cos(b*x + a)*log(117
649/16*d^16 + 117649/4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) +
117649/8*(sqrt(2)*(d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^
4)^(3/4)*b^3*d^8*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a
))) - 21*sqrt(2)*(d^10/b^4)^(1/4)*b*cos(b*x + a)*log(117649/16*d^16 + 11764
9/4*sqrt(d^10/b^4)*b^2*d^11*cos(b*x + a)*sin(b*x + a) - 117649/8*(sqrt(2)*(
d^10/b^4)^(1/4)*b*d^13*cos(b*x + a)^2 + sqrt(2)*(d^10/b^4)^(3/4)*b^3*d^8*co
s(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) + 32*(3*d^2*cos
(b*x + a)^2 + 4*d^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))*sin(b*x + a))/(b*cos
(b*x + a))
```

giac [A] time = 0.50, size = 252, normalized size = 1.02

$$\frac{1}{48}\left(\frac{24\sqrt{d\tan(bx+a)}\,d^2\tan(bx+a)}{\left(d^2\tan(bx+a)^2+d^2\right)b}-\frac{42\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{bd}-\frac{42\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\cdots}{\cdots}\right)}{bd}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] 1/48*(24*sqrt(d*tan(b*x + a))*d^2*tan(b*x + a)/((d^2*tan(b*x + a)^2 + d^2)*
b) - 42*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*s
qrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d) - 42*sqrt(2)*abs(d)^(3/2)*arctan(-
1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(
b*d) + 21*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x
```

```
+ a))*sqrt(abs(d)) + abs(d))/(b*d) - 21*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x
+ a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d) + 32*sqrt(
d*tan(b*x + a))*tan(b*x + a)/b)*d^2
```

maple [C] time = 0.41, size = 564, normalized size = 2.28

$$\frac{(-1+\cos(bx+a))\left(21i\cos(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\ \text{EllipticPi}\left(\sqrt{\frac{1-\cdots}{\cdots}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/24/b*(-1+cos(b*x+a))*(21*I*cos(b*x+a)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1
/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a)
)/sin(b*x+a))^(1/2)-21*I*cos(b*x+a)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/s
in(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*
((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/si
n(b*x+a))^(1/2)-21*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b
*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2
*2^(1/2))-21*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*
EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/
2))+6*cos(b*x+a)^3*2^(1/2)-6*cos(b*x+a)^2*2^(1/2)+8*cos(b*x+a)*2^(1/2)-8*2^
(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+
a)^5*2^(1/2)
```

maxima [A] time = 0.83, size = 209, normalized size = 0.85

$$-\frac{21\,d^6\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(d\tan(bx+a)+\sqrt{2}\sqrt{d\tan(bx+a)}\sqrt{d}+d\right)}{\sqrt{d}}\cdots\right.}{48\,bd^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] -1/48*(21*d^6*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan
(b*x + a)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(
d) - 2*sqrt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(b*x + a)
+ sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(b*x
 + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d)) - 24*(d*tan(b*x
```

```
+ a))^(3/2)*d^6/(d^2*tan(b*x + a)^2 + d^2) - 32*(d*tan(b*x + a))^(3/2)*d^4)
/(b*d^3)
```

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

$$\int \sin(a+bx)^2 (d\tan(a+bx))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(d*tan(a + b*x))^(5/2),x)
[Out] int(sin(a + b*x)^2*(d*tan(a + b*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2*(d*tan(b*x+a))**(5/2),x)
[Out] Timed out
```

3.75 $\int \csc^2(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=20

$$\frac{2d(d\tan(a+bx))^{3/2}}{3b}$$

```
[Out] 2/3*d*(d*tan(b*x+a))^(3/2)/b
```

Rubi [A] time = 0.04, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 30}

$$\frac{2d(d\tan(a+bx))^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^2*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*d*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\begin{aligned}\int \csc^2(a+bx)(d\tan(a+bx))^{5/2}\,dx &= \frac{d\,\text{Subst}\left(\int \sqrt{x}\,dx, x, d\tan(a+bx)\right)}{b}\\ &= \frac{2d(d\tan(a+bx))^{3/2}}{3b}\end{aligned}$$

Mathematica [A] time = 0.08, size = 20, normalized size = 1.00

$$\frac{2d(d\tan(a+bx))^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^2*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*d*(d*Tan[a + b*x])^(3/2))/(3*b)
```

fricas [B] time = 0.58, size = 40, normalized size = 2.00

$$\frac{2\,d^{2}\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\,\sin\left(bx+a\right)}{3\,b\cos\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*d^2*sqrt(d*sin(b*x + a)/cos(b*x + a))*sin(b*x + a)/(b*cos(b*x + a))
```

giac [A] time = 0.62, size = 24, normalized size = 1.20

$$\frac{2\,\sqrt{d\tan\left(bx+a\right)}\,d^{2}\tan\left(bx+a\right)}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*sqrt(d*tan(b*x + a))*d^2*tan(b*x + a)/b
```

maple [B] time = 0.48, size = 38, normalized size = 1.90

$$\frac{2\cos\left(bx+a\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{5}{2}}}{3b\sin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 2/3/b*cos(b*x+a)*(d*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)
```

maxima [A] time = 0.42, size = 23, normalized size = 1.15

$$\frac{2\,\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}}{3\,b\tan\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(d*tan(b*x + a))^(5/2)/(b*tan(b*x + a))
```

mupad [B] time = 2.48, size = 56, normalized size = 2.80

$$\frac{2\,d^2\,\sin\left(2\,a+2\,b\,x\right)\,\sqrt{\frac{d\,\sin\left(2\,a+2\,b\,x\right)}{\cos\left(2\,a+2\,b\,x\right)+1}}}{3\,b\,\left(\cos\left(2\,a+2\,b\,x\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^2,x)
```

```
[Out] (2*d^2*sin(2*a + 2*b*x)*((d*sin(2*a + 2*b*x))/(cos(2*a + 2*b*x) + 1))^(1/2)
)/(3*b*(cos(2*a + 2*b*x) + 1))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.76 $\int \csc^4(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=41

$$\frac{2d(d\tan(a+bx))^{3/2}}{3b}-\frac{2d^3}{b\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*d^3/b/(d*tan(b*x+a))^(1/2)+2/3*d*(d*tan(b*x+a))^(3/2)/b
```

Rubi [A] time = 0.05, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 14}

$$\frac{2d(d\tan(a+bx))^{3/2}}{3b}-\frac{2d^3}{b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^4*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*d^3)/(b*Sqrt[d*Tan[a + b*x]]) + (2*d*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^4(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{d\,\text{Subst}\left(\int \frac{d^2+x^2}{x^{3/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^2}{x^{3/2}}+\sqrt{x}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^3}{b\sqrt{d\tan(a+bx)}} + \frac{2d(d\tan(a+bx))^{3/2}}{3b}$$

Mathematica [A] time = 0.11, size = 32, normalized size = 0.78

$$-\frac{2d\left(3\cot^2(a+bx)-1\right)(d\tan(a+bx))^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^4*(d*Tan[a + b*x])^(5/2),x]
[Out] (-2*d*(-1 + 3*Cot[a + b*x]^2)*(d*Tan[a + b*x])^(3/2))/(3*b)
```

fricas [A] time = 0.59, size = 58, normalized size = 1.41

$$-\frac{2\left(4\,d^2\cos\left(bx+a\right)^2-d^2\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{3\,b\cos\left(bx+a\right)\sin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
[Out] -2/3*(4*d^2*cos(b*x + a)^2 - d^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))/(b*cos(
b*x + a)*sin(b*x + a))
```

giac [A] time = 0.54, size = 42, normalized size = 1.02

$$\frac{2}{3}\,d^2\left(\frac{\sqrt{d\tan\left(bx+a\right)}\,\tan\left(bx+a\right)}{b}-\frac{3\,d}{\sqrt{d\tan\left(bx+a\right)}\,b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
[Out] 2/3*d^2*(sqrt(d*tan(b*x + a))*tan(b*x + a)/b - 3*d/(sqrt(d*tan(b*x + a))*b)
)
```

maple [A] time = 0.50, size = 50, normalized size = 1.22

$$-\frac{2\left(4\left(\cos^{2}\left(bx+a\right)\right)-1\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{5}{2}}\cos\left(bx+a\right)}{3b\sin\left(bx+a\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^4*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] -2/3/b*(4*cos(b*x+a)^2-1)*(d*sin(b*x+a)/cos(b*x+a))^(5/2)*cos(b*x+a)/sin(b*
x+a)^3
```

maxima [A] time = 0.57, size = 36, normalized size = 0.88

$$-\frac{2\,d^{3}\left(\frac{3}{\sqrt{d\tan(bx+a)}}-\frac{(d\tan(bx+a))^{\frac{3}{2}}}{d^{2}}\right)}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*d^3*(3/sqrt(d*tan(b*x + a)) - (d*tan(b*x + a))^(3/2)/d^2)/b
```

mupad [B] time = 2.72, size = 64, normalized size = 1.56

$$-\frac{4\,d^{2}\,\left(\sin\left(2\,a+2\,b\,x\right)+\sin\left(4\,a+4\,b\,x\right)\right)\,\sqrt{\frac{d\,\sin(2\,a+2\,b\,x)}{\cos(2\,a+2\,b\,x)+1}}}{3\,b\sin\left(2\,a+2\,b\,x\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^4,x)
```

```
[Out] -(4*d^2*(sin(2*a + 2*b*x) + sin(4*a + 4*b*x))*((d*sin(2*a + 2*b*x))/(cos(2*
a + 2*b*x) + 1))^(1/2))/(3*b*sin(2*a + 2*b*x)^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**4*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.77 $\int \csc^6(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=63

$$-\frac{2d^5}{5b(d\tan(a+bx))^{5/2}}-\frac{4d^3}{b\sqrt{d\tan(a+bx)}}+\frac{2d(d\tan(a+bx))^{3/2}}{3b}$$

```
[Out] -4*d^3/b/(d*tan(b*x+a))^(1/2)-2/5*d^5/b/(d*tan(b*x+a))^(5/2)+2/3*d*(d*tan(b
*x+a))^(3/2)/b
```

Rubi [A] time = 0.05, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 270}

$$-\frac{2d^5}{5b(d\tan(a+bx))^{5/2}}-\frac{4d^3}{b\sqrt{d\tan(a+bx)}}+\frac{2d(d\tan(a+bx))^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^6*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*d^5)/(5*b*(d*Tan[a + b*x])^(5/2)) - (4*d^3)/(b*Sqrt[d*Tan[a + b*x]]) +
(2*d*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^6(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{d\,\text{Subst}\left(\int \frac{(d^2+x^2)^2}{x^{7/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^4}{x^{7/2}}+\frac{2d^2}{x^{3/2}}+\sqrt{x}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^5}{5b(d\tan(a+bx))^{5/2}} - \frac{4d^3}{b\sqrt{d\tan(a+bx)}} + \frac{2d(d\tan(a+bx))^{3/2}}{3b}$$

Mathematica [A] time = 0.23, size = 42, normalized size = 0.67

$$-\frac{2d(d\tan(a+bx))^{3/2}\left(3\cot^2(a+bx)\left(\csc^2(a+bx)+9\right)-5\right)}{15b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^6*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*d*(-5 + 3*Cot[a + b*x]^2*(9 + Csc[a + b*x]^2))*(d*Tan[a + b*x])^(3/2))/
(15*b)
```

fricas [A] time = 0.44, size = 82, normalized size = 1.30

$$-\frac{2\left(32\,d^2\cos(bx+a)^4-40\,d^2\cos(bx+a)^2+5\,d^2\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{15\left(b\cos(bx+a)^3-b\cos(bx+a)\right)\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] -2/15*(32*d^2*cos(b*x + a)^4 - 40*d^2*cos(b*x + a)^2 + 5*d^2)*sqrt(d*sin(b*
x + a)/cos(b*x + a))/((b*cos(b*x + a)^3 - b*cos(b*x + a))*sin(b*x + a))
```

giac [A] time = 0.71, size = 70, normalized size = 1.11

$$\frac{2}{15}d^2\left(\frac{5\sqrt{d\tan(bx+a)}\,\tan(bx+a)}{b} - \frac{3\left(10\,d^3\tan(bx+a)^2+d^3\right)}{\sqrt{d\tan(bx+a)}\,bd^2\tan(bx+a)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] 2/15*d^2*(5*sqrt(d*tan(b*x + a))*tan(b*x + a)/b - 3*(10*d^3*tan(b*x + a)^2
+ d^3)/(sqrt(d*tan(b*x + a))*b*d^2*tan(b*x + a)^2))
```

maple [A] time = 0.53, size = 60, normalized size = 0.95

$$\frac{2\left(32\left(\cos^{4}\left(bx+a\right)\right)-40\left(\cos^{2}\left(bx+a\right)\right)+5\right)\cos\left(bx+a\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{5}{2}}}{15b\sin\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^6*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 2/15/b*(32*cos(b*x+a)^4-40*cos(b*x+a)^2+5)*cos(b*x+a)*(d*sin(b*x+a)/cos(b*x
+a))^(5/2)/sin(b*x+a)^5
```

maxima [A] time = 0.47, size = 56, normalized size = 0.89

$$\frac{2\,d^{5}\left(\frac{5\,(d\tan(bx+a))^{\frac{3}{2}}}{d^{4}}-\frac{3\left(10\,d^{2}\tan(bx+a)^{2}+d^{2}\right)}{(d\tan(bx+a))^{\frac{5}{2}}d^{2}}\right)}{15\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] 2/15*d^5*(5*(d*tan(b*x + a))^(3/2)/d^4 - 3*(10*d^2*tan(b*x + a)^2 + d^2)/((
d*tan(b*x + a))^(5/2)*d^2))/b
```

mupad [B] time = 5.46, size = 134, normalized size = 2.13

$$\frac{32\,d^{2}\sqrt{-\frac{d\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,2\mathrm{i}+\mathrm{e}^{a\,4\mathrm{i}+b\,x\,4\mathrm{i}}\,3\mathrm{i}+\mathrm{e}^{a\,6\mathrm{i}+b\,x\,6\mathrm{i}}\,2\mathrm{i}-\mathrm{e}^{a\,8\mathrm{i}+b\,x\,8\mathrm{i}}\,2\mathrm{i}-2\mathrm{i}\right)}{15\,b\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)^{3}\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^6,x)
```

```
[Out] (32*d^2*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*
(exp(a*2i + b*x*2i)*2i + exp(a*4i + b*x*4i)*3i + exp(a*6i + b*x*6i)*2i - ex
p(a*8i + b*x*8i)*2i - 2i))/(15*b*(exp(a*2i + b*x*2i) - 1)^3*(exp(a*2i + b*x
*2i) + 1))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**6*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.78 $\int \sin^3(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=137

$$\frac{d^3\sin^3(a+bx)}{b\sqrt{d\tan(a+bx)}}+\frac{5d^3\sin(a+bx)}{2b\sqrt{d\tan(a+bx)}}-\frac{5d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{4b}+\frac{2d\sin^3}{}$$

```
[Out] 5/2*d^3*sin(b*x+a)/b/(d*tan(b*x+a))^(1/2)+d^3*sin(b*x+a)^3/b/(d*tan(b*x+a))
^(1/2)+5/4*d^2*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*Ell
ipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)
/b+2/3*d*sin(b*x+a)^3*(d*tan(b*x+a))^(3/2)/b
```

Rubi [A] time = 0.17, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2594, 2598, 2601, 2573, 2641}

$$\frac{d^3\sin^3(a+bx)}{b\sqrt{d\tan(a+bx)}}+\frac{5d^3\sin(a+bx)}{2b\sqrt{d\tan(a+bx)}}-\frac{5d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{4b}+\frac{2d\sin^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (5*d^3*Sin[a + b*x])/(2*b*Sqrt[d*Tan[a + b*x]]) + (d^3*Sin[a + b*x]^3)/(b*S
qrt[d*Tan[a + b*x]]) - (5*d^2*Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqr
t[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(4*b) + (2*d*Sin[a + b*x]^3*(d*Ta
n[a + b*x])^(3/2))/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2594

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
n - 1)), x] - Dist[(b^2*(m + n - 1))/(n - 1), Int[(a*Sin[e + f*x])^m*(b*Tan
[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] && Int
egersQ[2*m, 2*n] &&  !(GtQ[m, 1] &&  !IntegerQ[(m - 1)/2])
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \sin^3(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{2d\sin^3(a+bx)(d\tan(a+bx))^{3/2}}{3b} - \left(3d^2\right)\int \sin^3(a+bx)\sqrt{d\tan(a+bx)}$$

$$= \frac{d^3\sin^3(a+bx)}{b\sqrt{d\tan(a+bx)}} + \frac{2d\sin^3(a+bx)(d\tan(a+bx))^{3/2}}{3b} - \frac{1}{2}\left(5d^2\right)\int \sin(a$$

$$= \frac{5d^3\sin(a+bx)}{2b\sqrt{d\tan(a+bx)}} + \frac{d^3\sin^3(a+bx)}{b\sqrt{d\tan(a+bx)}} + \frac{2d\sin^3(a+bx)(d\tan(a+bx))^{3/}}{3b}$$

$$= \frac{5d^3\sin(a+bx)}{2b\sqrt{d\tan(a+bx)}} + \frac{d^3\sin^3(a+bx)}{b\sqrt{d\tan(a+bx)}} + \frac{2d\sin^3(a+bx)(d\tan(a+bx))^{3/}}{3b}$$

$$= \frac{5d^3\sin(a+bx)}{2b\sqrt{d\tan(a+bx)}} + \frac{d^3\sin^3(a+bx)}{b\sqrt{d\tan(a+bx)}} + \frac{2d\sin^3(a+bx)(d\tan(a+bx))^{3/}}{3b}$$

$$= \frac{5d^3\sin(a+bx)}{2b\sqrt{d\tan(a+bx)}} + \frac{d^3\sin^3(a+bx)}{b\sqrt{d\tan(a+bx)}} - \frac{5d^2\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)}{4}$$

Mathematica [C] time = 3.30, size = 153, normalized size = 1.12

$$-\frac{\csc(a+bx)\sqrt{\sec^2(a+bx)}\,(d\tan(a+bx))^{5/2}\left((77\cos(2(a+bx))+22\cos(4(a+bx))-\cos(6(a+bx))+22)\sqrt{ta}\right.}{48b\tan^{\frac{3}{2}}(a+bx)\left(\tan^2(a+\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] -1/48*(Csc[a + b*x]*Sqrt[Sec[a + b*x]^2]*(120*(-1)^(1/4)*Cos[2*(a + b*x)]*E
llipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1] + (22 + 77*Cos[2*(a
+ b*x)] + 22*Cos[4*(a + b*x)] - Cos[6*(a + b*x)])*Sqrt[Sec[a + b*x]^2]*Sqrt
[Tan[a + b*x]])*(d*Tan[a + b*x])^(5/2))/(b*Tan[a + b*x]^(3/2)*(-1 + Tan[a +
 b*x]^2))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(d^2\cos\left(bx+a\right)^2-d^2\right)\sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)\tan\left(bx+a\right)^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(d^2*cos(b*x + a)^2 - d^2)*sqrt(d*tan(b*x + a))*sin(b*x + a)*tan(
b*x + a)^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check si
gn: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unabl
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*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x
/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/
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```

```
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/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)ext_reduce Err
or: Bad Argument Typeext_reduce Error: Bad Argument TypeEvaluation time: 16
.31Done
```

maple [A] time = 0.46, size = 246, normalized size = 1.80

$$\frac{(-1+\cos(bx+a))\left(15\,\mathrm{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/12/b*(-1+cos(b*x+a))*(15*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2)*sin(b*x+a)-2*2^(1/2)*cos(b*x+a)^5+2*cos(b*x+a)^4*2^(1/2)+13*cos(b*x+
a)^3*2^(1/2)-13*cos(b*x+a)^2*2^(1/2)+4*cos(b*x+a)*2^(1/2)-4*2^(1/2))*cos(b*
x+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)^6*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{5}{2}}\sin(bx+a)^3\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(5/2)*sin(b*x + a)^3, x)
```

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

$$\int \sin(a+b\,x)^3\,(d\tan(a+b\,x))^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)^3*(d*tan(a + b*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.79 $\int \sin(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=108

$$\frac{5d^3\sin(a+bx)}{3b\sqrt{d\tan(a+bx)}}-\frac{5d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{6b}+\frac{2d\sin(a+bx)(d\tan(a+$$

```
[Out] 5/3*d^3*sin(b*x+a)/b/(d*tan(b*x+a))^(1/2)+5/6*d^2*csc(b*x+a)*(sin(a+1/4*Pi+
b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*
b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b+2/3*d*sin(b*x+a)*(d*tan(b*x+a))^(3/2)
/b
```

Rubi [A] time = 0.12, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2594, 2598, 2601, 2573, 2641}

$$\frac{5d^3\sin(a+bx)}{3b\sqrt{d\tan(a+bx)}}-\frac{5d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{6b}+\frac{2d\sin(a+bx)(d\tan(a+$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (5*d^3*Sin[a + b*x])/(3*b*Sqrt[d*Tan[a + b*x]]) - (5*d^2*Csc[a + b*x]*Ellip
ticF[a - Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(6*b)
+ (2*d*Sin[a + b*x]*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2594

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
n - 1)), x] - Dist[(b^2*(m + n - 1))/(n - 1), Int[(a*Sin[e + f*x])^m*(b*Tan
[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] && Int
egersQ[2*m, 2*n] &&  !(GtQ[m, 1] &&  !IntegerQ[(m - 1)/2])
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
```

```
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \sin(a+bx)(d\tan(a+bx))^{5/2}\,dx &= \frac{2d\sin(a+bx)(d\tan(a+bx))^{3/2}}{3b}-\frac{1}{3}\left(5d^2\right)\int \sin(a+bx)\sqrt{d\tan(a+bx)}\,dx\\ &= \frac{5d^3\sin(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2d\sin(a+bx)(d\tan(a+bx))^{3/2}}{3b}-\frac{1}{6}\left(5d^2\right)\int \csc(a+\\ &= \frac{5d^3\sin(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2d\sin(a+bx)(d\tan(a+bx))^{3/2}}{3b}-\frac{\left(5d^2\sqrt{\cos(a+bx)}\right.}{}\\ &= \frac{5d^3\sin(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2d\sin(a+bx)(d\tan(a+bx))^{3/2}}{3b}-\frac{1}{6}\left(5d^2\csc(a+bx)\right.\\ &= \frac{5d^3\sin(a+bx)}{3b\sqrt{d\tan(a+bx)}}-\frac{5d^2\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d\tan}}{6b}\end{aligned}$$

Mathematica [C] time = 2.24, size = 133, normalized size = 1.23

$$-\frac{\cos(2(a+bx))\csc(a+bx)\sqrt{\sec^2(a+bx)}\,(d\tan(a+bx))^{5/2}\left((3\cos(2(a+bx))+7)\sqrt{\tan(a+bx)}\,\sqrt{\sec^2(a+bx)}\right.}{6b\tan^{\frac{3}{2}}(a+bx)\left(\tan^2(a+bx)-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] -1/6*(Cos[2*(a + b*x)]*Csc[a + b*x]*Sqrt[Sec[a + b*x]^2]*(10*(-1)^(1/4)*Ell
ipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1] + (7 + 3*Cos[2*(a + b*
x)])*Sqrt[Sec[a + b*x]^2]*Sqrt[Tan[a + b*x]])*(d*Tan[a + b*x])^(5/2))/(b*Ta
n[a + b*x]^(3/2)*(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d^{2}\sin\left(bx+a\right)\tan\left(bx+a\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d^2*sin(b*x + a)*tan(b*x + a)^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check si
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*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (
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eck sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2
)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/
2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check s
ign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)ext_
reduce Error: Bad Argument TypeEvaluation time: 8.69Done
```

maple [A] time = 0.41, size = 220, normalized size = 2.04

$$\frac{\left(-1+\cos\left(bx+a\right)\right)\left(5\,\mathrm{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos\left(bx+a\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/6/b*(-1+cos(b*x+a))*(5*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*
x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
1/2)*sin(b*x+a)+3*cos(b*x+a)^3*2^(1/2)-3*cos(b*x+a)^2*2^(1/2)+2*cos(b*x+a)*
2^(1/2)-2*2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(5
/2)/sin(b*x+a)^6*2^(1/2)
```

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

$$\int \left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(5/2)*sin(b*x + a), x)
```

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

$$\int \sin\left(a+b\,x\right)\,{\left(d\,\tan\left(a+b\,x\right)\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)*(d*tan(a + b*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.80 $\int \csc(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=80

$$\frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b}-\frac{d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}$$

```
[Out] 1/3*d^2*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(
cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b+2/3*
d*csc(b*x+a)*(d*tan(b*x+a))^(3/2)/b
```

Rubi [A] time = 0.10, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2594, 2601, 2573, 2641}

$$\frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b}-\frac{d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] -(d^2*Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt
[d*Tan[a + b*x]])/(3*b) + (2*d*Csc[a + b*x]*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2594

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
n - 1)), x] - Dist[(b^2*(m + n - 1))/(n - 1), Int[(a*Sin[e + f*x])^m*(b*Tan
[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] && Int
egersQ[2*m, 2*n] &&  !(GtQ[m, 1] &&  !IntegerQ[(m - 1)/2])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \csc(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b} - \frac{1}{3}d^2\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx$$
$$= \frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b} - \frac{\left(d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{}{\sqrt{\cos}}}{3\sqrt{\sin(a+bx)}}$$
$$= \frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b} - \frac{1}{3}\left(d^2\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(}\right.$$
$$= -\frac{d^2\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}{3b} + \frac{2d\csc(}{}$$

Mathematica [C] time = 0.39, size = 71, normalized size = 0.89

$$\frac{2d^2\cos(a+bx)\sqrt{d\tan(a+bx)}\left(\sec^2(a+bx)-\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(a+bx)\right)\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*d^2*Cos[a + b*x]*(Sec[a + b*x]^2 - Hypergeometric2F1[1/4, 1/2, 5/4, -Tan
[a + b*x]^2]*Sqrt[Sec[a + b*x]^2])*Sqrt[d*Tan[a + b*x]])/(3*b)
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan(bx+a)}\,d^2\csc(bx+a)\tan(bx+a)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d^2*csc(b*x + a)*tan(b*x + a)^2, x)
```

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

$$\int (d \tan (bx + a))^{\frac{5}{2}} \csc (bx + a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a), x)
```

maple [B] time = 0.47, size = 192, normalized size = 2.40

$$\frac{(-1 + \cos (bx + a)) \left(\text{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}, \frac{\sqrt{2}}{2}\right) \cos (bx + a) \sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}} \sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}} \sqrt{}\right.}{3b \sin (bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)*(d*tan(b*x+a))^(5/2),x)
[Out] 1/3/b*(-1+cos(b*x+a))*(EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+
a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2)*sin(b*x+a)+cos(b*x+a)*2^(1/2)-2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*si
n(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)^6*2^(1/2)
```

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

$$\int (d \tan (bx + a))^{\frac{5}{2}} \csc (bx + a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a), x)
```

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

$$\int \frac{(d \tan (a + b\, x))^{5/2}}{\sin (a + b\, x)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(5/2)/sin(a + b*x),x)
```

```
[Out] int((d*tan(a + b*x))^(5/2)/sin(a + b*x), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.81 $\int \csc^3(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=80

$$\frac{2d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}+\frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b}$$

```
[Out] -2/3*d^2*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF
(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b+2/3
*d*csc(b*x+a)*(d*tan(b*x+a))^(3/2)/b
```

Rubi [A] time = 0.11, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2593, 2601, 2573, 2641}

$$\frac{2d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}+\frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^3*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*d^2*Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqr
t[d*Tan[a + b*x]])/(3*b) + (2*d*Csc[a + b*x]*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2593

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1))
/(a^2*f*(n - 1)), x] - Dist[(b^2*(m + 2))/(a^2*(n - 1)), Int[(a*Sin[e + f*x
])^(m + 2)*(b*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && Gt
Q[n, 1] && (LtQ[m, -1] || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*
n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
```

```
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \csc^3(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b} + \frac{1}{3}\left(2d^2\right)\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,d$$
$$= \frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b} + \frac{\left(2d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{}{\sqrt{}}}{3\sqrt{\sin(a+bx)}}$$
$$= \frac{2d\csc(a+bx)(d\tan(a+bx))^{3/2}}{3b} + \frac{1}{3}\left(2d^2\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\,\mathrm{ta}}\right.$$
$$= \frac{2d^2\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}{3b} + \frac{2d\csc(}{}$$

Mathematica [C] time = 0.35, size = 71, normalized size = 0.89

$$\frac{2d^2\cos(a+bx)\sqrt{d\tan(a+bx)}\left(2\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(a+bx)\right)+\sec^2(a+bx)\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^3*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*d^2*Cos[a + b*x]*(Sec[a + b*x]^2 + 2*Hypergeometric2F1[1/4, 1/2, 5/4, -T
an[a + b*x]^2]*Sqrt[Sec[a + b*x]^2])*Sqrt[d*Tan[a + b*x]])/(3*b)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d^2\csc\left(bx+a\right)^3\tan\left(bx+a\right)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d^2*csc(b*x + a)^3*tan(b*x + a)^2, x)
```

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

$$\int (d\tan(bx+a))^{\frac{5}{2}}\csc(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a)^3, x)
```

maple [B] time = 0.51, size = 192, normalized size = 2.40

$$-\frac{(-1+\cos(bx+a))\left(2\,\mathrm{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}}{3b\sin(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^3*(d*tan(b*x+a))^(5/2),x)
[Out] -1/3/b*(-1+cos(b*x+a))*(2*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b
*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2)*sin(b*x+a)-cos(b*x+a)*2^(1/2)+2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d
*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)^6*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{5}{2}}\csc(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a)^3, x)
```

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

$$\int \frac{(d\tan(a+b\,x))^{5/2}}{\sin(a+b\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^3,x)
[Out] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^3, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3*(d*tan(b*x+a))**(5/2),x)
[Out] Timed out
```

3.82 $\int \csc^5(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=110

$$-\frac{4d^3\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{4d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}+\frac{2d\csc^3(a+bx)(d\tan(a}{3b}$$

```
[Out] -4/3*d^3*csc(b*x+a)/b/(d*tan(b*x+a))^(1/2)-4/3*d^2*csc(b*x+a)*(sin(a+1/4*Pi
+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2
*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b+2/3*d*csc(b*x+a)^3*(d*tan(b*x+a))^(3
/2)/b
```

Rubi [A] time = 0.15, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2593, 2599, 2601, 2573, 2641}

$$-\frac{4d^3\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{4d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3b}+\frac{2d\csc^3(a+bx)(d\tan(a}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^5*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-4*d^3*Csc[a + b*x])/(3*b*Sqrt[d*Tan[a + b*x]]) + (4*d^2*Csc[a + b*x]*Elli
pticF[a - Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(3*b)
 + (2*d*Csc[a + b*x]^3*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2593

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1))
/(a^2*f*(n - 1)), x] - Dist[(b^2*(m + 2))/(a^2*(n - 1)), Int[(a*Sin[e + f*x
])^(m + 2)*(b*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && Gt
Q[n, 1] && (LtQ[m, -1] || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*
n]
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \csc^5(a+bx)(d\tan(a+bx))^{5/2}\,dx &= \frac{2d\csc^3(a+bx)(d\tan(a+bx))^{3/2}}{3b}+\left(2d^2\right)\int \csc^3(a+bx)\sqrt{d\tan(a+bx)}\,d\\ &= -\frac{4d^3\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2d\csc^3(a+bx)(d\tan(a+bx))^{3/2}}{3b}+\frac{1}{3}\left(4d^2\right)\int \csc(a\\ &= -\frac{4d^3\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2d\csc^3(a+bx)(d\tan(a+bx))^{3/2}}{3b}+\frac{\left(4d^2\sqrt{\cos(a+b}}{}\\ &= -\frac{4d^3\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{2d\csc^3(a+bx)(d\tan(a+bx))^{3/2}}{3b}+\frac{1}{3}\left(4d^2\csc(a+b\right.\\ &= -\frac{4d^3\csc(a+bx)}{3b\sqrt{d\tan(a+bx)}}+\frac{4d^2\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d}}{3b}\end{aligned}$$

Mathematica [C] time = 0.49, size = 110, normalized size = 1.00

$$-\frac{2d\csc^3(a+bx)(d\tan(a+bx))^{3/2}\left(\cos(2(a+bx))\sqrt{\sec^2(a+bx)}+2\sqrt[4]{-1}\sin(2(a+bx))\sqrt{\tan(a+bx)}F\left(i\sinh^{-1}\right.\right.}{3b\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^5*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*d*Csc[a + b*x]^3*(Cos[2*(a + b*x)]*Sqrt[Sec[a + b*x]^2] + 2*(-1)^(1/4)*
EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1]*Sin[2*(a + b*x)]*Sq
rt[Tan[a + b*x]])*(d*Tan[a + b*x])^(3/2))/(3*b*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d^{2}\csc\left(bx+a\right)^{5}\tan\left(bx+a\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^5*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d^2*csc(b*x + a)^5*tan(b*x + a)^2, x)
```

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

$$\int\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}\csc\left(bx+a\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^5*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a)^5, x)
```

maple [B] time = 0.55, size = 316, normalized size = 2.87

$$\frac{\left(-1+\cos\left(bx+a\right)\right)^{2}\left(4\,\text{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-\cos(bx+a}{\sin(b}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^5*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/3/b*(-1+cos(b*x+a))^2*(4*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(
b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(
b*x+a)^2*sin(b*x+a)+4*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a
)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
)*sin(b*x+a)-2*cos(b*x+a)^2*2^(1/2)+2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d
*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)^8*2^(1/2)
```

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

$$\int\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}\csc\left(bx+a\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^5*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a)^5, x)
```

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

$$\int \frac{(d\tan (a+b\,x))^{5/2}}{\sin (a+b\,x)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^5,x)
```

```
[Out] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^5, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**5*(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.83 $\int \csc^7(a+bx)(d\tan(a+bx))^{5/2}\,dx$

Optimal. Leaf size=140

$$-\frac{20d^3\csc^3(a+bx)}{21b\sqrt{d\tan(a+bx)}}-\frac{40d^3\csc(a+bx)}{21b\sqrt{d\tan(a+bx)}}+\frac{40d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{21b}+$$

```
[Out] -40/21*d^3*csc(b*x+a)/b/(d*tan(b*x+a))^(1/2)-20/21*d^3*csc(b*x+a)^3/b/(d*ta
n(b*x+a))^(1/2)-40/21*d^2*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*
Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*
x+a))^(1/2)/b+2/3*d*csc(b*x+a)^5*(d*tan(b*x+a))^(3/2)/b
```

Rubi [A] time = 0.18, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2593, 2599, 2601, 2573, 2641}

$$-\frac{20d^3\csc^3(a+bx)}{21b\sqrt{d\tan(a+bx)}}-\frac{40d^3\csc(a+bx)}{21b\sqrt{d\tan(a+bx)}}+\frac{40d^2\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{21b}+$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^7*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-40*d^3*Csc[a + b*x])/(21*b*Sqrt[d*Tan[a + b*x]]) - (20*d^3*Csc[a + b*x]^3
)/(21*b*Sqrt[d*Tan[a + b*x]]) + (40*d^2*Csc[a + b*x]*EllipticF[a - Pi/4 + b
*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(21*b) + (2*d*Csc[a + b
*x]^5*(d*Tan[a + b*x])^(3/2))/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2593

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1))
/(a^2*f*(n - 1)), x] - Dist[(b^2*(m + 2))/(a^2*(n - 1)), Int[(a*Sin[e + f*x
])^(m + 2)*(b*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && Gt
Q[n, 1] && (LtQ[m, -1] || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*
n]
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \csc^7(a+bx)(d\tan(a+bx))^{5/2}\,dx = \frac{2d\csc^5(a+bx)(d\tan(a+bx))^{3/2}}{3b} + \frac{1}{3}\left(10d^2\right)\int \csc^5(a+bx)\sqrt{d\tan(a+bx}$$

$$= -\frac{20d^3\csc^3(a+bx)}{21b\sqrt{d\tan(a+bx)}} + \frac{2d\csc^5(a+bx)(d\tan(a+bx))^{3/2}}{3b} + \frac{1}{7}\left(20d^2\right)\int \csc$$

$$= -\frac{40d^3\csc(a+bx)}{21b\sqrt{d\tan(a+bx)}} - \frac{20d^3\csc^3(a+bx)}{21b\sqrt{d\tan(a+bx)}} + \frac{2d\csc^5(a+bx)(d\tan(a+bx}{3b}$$

$$= -\frac{40d^3\csc(a+bx)}{21b\sqrt{d\tan(a+bx)}} - \frac{20d^3\csc^3(a+bx)}{21b\sqrt{d\tan(a+bx)}} + \frac{2d\csc^5(a+bx)(d\tan(a+bx}{3b}$$

$$= -\frac{40d^3\csc(a+bx)}{21b\sqrt{d\tan(a+bx)}} - \frac{20d^3\csc^3(a+bx)}{21b\sqrt{d\tan(a+bx)}} + \frac{2d\csc^5(a+bx)(d\tan(a+bx}{3b}$$

$$= -\frac{40d^3\csc(a+bx)}{21b\sqrt{d\tan(a+bx)}} - \frac{20d^3\csc^3(a+bx)}{21b\sqrt{d\tan(a+bx)}} + \frac{40d^2\csc(a+bx)F\left(a-\frac{\pi}{4}+\right.}{}$$

Mathematica [C] time = 1.65, size = 130, normalized size = 0.93

$$-\frac{d^2\csc(a+bx)\sqrt{d\tan(a+bx)}\left((10\cos(2(a+bx))-5\cos(4(a+bx))+1)\csc^3(a+bx)\sec(a+bx)\sqrt{\sec^2(a+bx)}\right.}{21b\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^7*(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] -1/21*(d^2*Csc[a + b*x]*((1 + 10*Cos[2*(a + b*x)] - 5*Cos[4*(a + b*x)])*Csc
[a + b*x]^3*Sec[a + b*x]*Sqrt[Sec[a + b*x]^2] + 80*(-1)^(1/4)*EllipticF[I*A
rcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1]*Sqrt[Tan[a + b*x]])*Sqrt[d*Tan[a
 + b*x]])/(b*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d^2\csc\left(bx+a\right)^7\tan\left(bx+a\right)^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^7*(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d^2*csc(b*x + a)^7*tan(b*x + a)^2, x)
```

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

$$\int \left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}\csc\left(bx+a\right)^7\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^7*(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a)^7, x)
```

maple [B] time = 0.59, size = 571, normalized size = 4.08

$$-\frac{\left(-1+\cos\left(bx+a\right)\right)^2\left(40\left(\cos^4\left(bx+a\right)\right)\text{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sin\left(bx+a\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^7*(d*tan(b*x+a))^(5/2),x)
```

```
[Out] -1/21/b*(-1+cos(b*x+a))^2*(40*cos(b*x+a)^4*EllipticF(((1-cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))
^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2)+40*cos(b*x+a)^3*EllipticF(((1-cos(b*x+a)+sin(b*x+a))
/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a)
)^(1/2)*sin(b*x+a)-40*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
```

```
),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a
)^2*sin(b*x+a)-40*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/
2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+si
n(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*si
n(b*x+a)-20*cos(b*x+a)^4*2^(1/2)+30*cos(b*x+a)^2*2^(1/2)-7*2^(1/2))*cos(b*x
+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)^10*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{5}{2}} \csc(bx+a)^7 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^7*(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
[Out] integrate((d*tan(b*x + a))^(5/2)*csc(b*x + a)^7, x)
```

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

$$\int \frac{(d\tan(a+b\,x))^{5/2}}{\sin(a+b\,x)^7} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^7,x)
[Out] int((d*tan(a + b*x))^(5/2)/sin(a + b*x)^7, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**7*(d*tan(b*x+a))**(5/2),x)
[Out] Timed out
```

3.84 $\int \frac{\sin^4(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=257

$$-\frac{\cos^4(a+bx)(d\tan(a+bx))^{5/2}}{4bd^3}-\frac{5\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b\sqrt{d}}+\frac{5\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b\sqrt{d}}-\frac{5\log\left(\sqrt{d}\,\tan(a+\right.}{}$$

```
[Out] -5/64*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)/d^(1/2)+5/64
*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)/d^(1/2)-5/128*ln(
d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)/d^(1/2)+
5/128*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)
/d^(1/2)-5/16*cos(b*x+a)^2*(d*tan(b*x+a))^(1/2)/b/d-1/4*cos(b*x+a)^4*(d*tan
(b*x+a))^(5/2)/b/d^3
```

Rubi [A] time = 0.17, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2591, 288, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{\cos^4(a+bx)(d\tan(a+bx))^{5/2}}{4bd^3}-\frac{5\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b\sqrt{d}}+\frac{5\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,b\sqrt{d}}-\frac{5\log\left(\sqrt{d}\,\tan(a+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^4/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-5*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]*b*Sqrt[
d]) + (5*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]*b*
Sqrt[d]) - (5*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b
*x]]])/(64*Sqrt[2]*b*Sqrt[d]) + (5*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqr
t[2]*Sqrt[d*Tan[a + b*x]]])/(64*Sqrt[2]*b*Sqrt[d]) - (5*Cos[a + b*x]^2*Sqrt
[d*Tan[a + b*x]])/(16*b*d) - (Cos[a + b*x]^4*(d*Tan[a + b*x])^(5/2))/(4*b*d
^3)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
```

```
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
```

```
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sin^4(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx = \frac{d\,\mathrm{Subst}\left(\int \frac{x^{7/2}}{\left(d^2+x^2\right)^3}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^4(a+bx)(d\tan(a+bx))^{5/2}}{4bd^3} + \frac{(5d)\,\mathrm{Subst}\left(\int \frac{x^{3/2}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{8b}$$

$$= -\frac{5\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{5/2}}{4bd^3} + \frac{(5d)\,\mathrm{Subst}\left(\int \frac{}{\sqrt{x}\,(\ldots}\right.}{}$$

$$= -\frac{5\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{5/2}}{4bd^3} + \frac{(5d)\,\mathrm{Subst}\left(\int \frac{1}{d^2+x^4}\ldots\right.}{}$$

$$= -\frac{5\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{5/2}}{4bd^3} + \frac{5\,\mathrm{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx\ldots\right.}{3\ldots}$$

$$= -\frac{5\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{5/2}}{4bd^3} + \frac{5\,\mathrm{Subst}\left(\int \frac{1}{d-\sqrt{2}\sqrt{d}\ldots}\right.}{}$$

$$= -\frac{5\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{64\sqrt{2}\,b\sqrt{d}} + \frac{5\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)+\ldots\right.}{64\sqrt{2}\,b\sqrt{d}}$$

$$= -\frac{5\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b\sqrt{d}} + \frac{5\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,b\sqrt{d}} - \frac{5\log\left(\sqrt{d}+\sqrt{d}\tan(a\ldots\right.}{64\ldots}$$

Mathematica [A] time = 0.71, size = 122, normalized size = 0.47

$$\frac{\sec(a+bx)\left(-7\sin(a+bx)-6\sin(3(a+bx))+\sin(5(a+bx))-5\sqrt{\sin(2(a+bx))}\,\sin^{-1}(\cos(a+bx)-\sin(a+\ldots\right.}{64b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^4/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (Sec[a + b*x]*(-7*Sin[a + b*x] - 5*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Sqrt
[Sin[2*(a + b*x)]] + 5*Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*
x)]]]*Sqrt[Sin[2*(a + b*x)]] - 6*Sin[3*(a + b*x)] + Sin[5*(a + b*x)]))/(64*
b*Sqrt[d*Tan[a + b*x]])
```

fricas [B] time = 62.82, size = 1456, normalized size = 5.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] -1/256*(10*sqrt(2)*b*d*(1/(b^4*d^2))^(1/4)*arctan(1/2*(sqrt(4*b^2*d*sqrt(1/
(b^4*d^2))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)
*cos(b*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a)*sin(b*x + a))*
sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*
sin(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x +
 a)/cos(b*x + a)) + 2*sin(b*x + a)) - (sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*si
n(b*x + a) - sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a
)/cos(b*x + a)))/sin(b*x + a)) + 10*sqrt(2)*b*d*(1/(b^4*d^2))^(1/4)*arctan(
1/2*(sqrt(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*
b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*co
s(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b
^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b
*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 2*sin(b*x + a)) - (sqrt(2)*b^3
*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) - sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x
 + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/sin(b*x + a)) + 10*sqrt(2)*b*d*(1
/(b^4*d^2))^(1/4)*arctan(1/2*((sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x +
a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(4*b^2*d*sqrt(1/(b^4*d
^2))*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b
*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d
*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (sqrt(
2)*b^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*c
os(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d*cos(b*x + a)^3 -
b^2*d*cos(b*x + a))*sqrt(1/(b^4*d^2)) + 2*sin(b*x + a))/((2*cos(b*x + a)^2
- 1)*sin(b*x + a))) + 10*sqrt(2)*b*d*(1/(b^4*d^2))^(1/4)*arctan(1/2*((sqrt(
2)*b^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*c
os(b*x + a))*sqrt(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*x + a)*sin(b*x + a) - 2*(
sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^
(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqr
t(d*sin(b*x + a)/cos(b*x + a)) + (sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x
```

```
 + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos
(b*x + a)) + 4*(b^2*d*cos(b*x + a)^3 - b^2*d*cos(b*x + a))*sqrt(1/(b^4*d^2)
) - 2*sin(b*x + a))/((2*cos(b*x + a)^2 - 1)*sin(b*x + a))) - 5*sqrt(2)*b*d*
(1/(b^4*d^2))^(1/4)*log(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*x + a)*sin(b*x + a)
 + 2*(sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*(1/(b^4*
d^2))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) +
1) + 5*sqrt(2)*b*d*(1/(b^4*d^2))^(1/4)*log(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*
x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 +
 sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x +
a)/cos(b*x + a)) + 1) - 16*(4*cos(b*x + a)^4 - 9*cos(b*x + a)^2)*sqrt(d*sin
(b*x + a)/cos(b*x + a)))/(b*d)
```

giac [A] time = 1.59, size = 246, normalized size = 0.96

$$\frac{5\sqrt{2}\sqrt{|d|}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{64\,bd}+\frac{5\sqrt{2}\sqrt{|d|}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{64\,bd}+\frac{5\sqrt{2}\sqrt{|d|}\log\left(d\,\mathrm{ta}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] 5/64*sqrt(2)*sqrt(abs(d))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sqrt
(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d) + 5/64*sqrt(2)*sqrt(abs(d))*arctan(-1
/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b
*d) + 5/128*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*
x + a))*sqrt(abs(d)) + abs(d))/(b*d) - 5/128*sqrt(2)*sqrt(abs(d))*log(d*tan
(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d) - 1/1
6*(9*sqrt(d*tan(b*x + a))*d^3*tan(b*x + a)^2 + 5*sqrt(d*tan(b*x + a))*d^3)/
((d^2*tan(b*x + a)^2 + d^2)^2*b)
```

maple [C] time = 0.51, size = 688, normalized size = 2.68

$$\frac{(-1+\cos(bx+a))\left(5i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\mathrm{si}}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^4/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] 1/64/b*(-1+cos(b*x+a))*(5*I*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x
+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2)*sin(b*x+a)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+
```

```
1/2*I,1/2*2^(1/2))-5*I*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*s
in(b*x+a)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I
,1/2*2^(1/2))+8*2^(1/2)*cos(b*x+a)^5-8*cos(b*x+a)^4*2^(1/2)-5*EllipticPi(((
1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(b*x+a
)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a)
)^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-5*EllipticPi(((1-cos(b
*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+
cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)
*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+10*sin(b*x+a)*EllipticF(((1-c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b
*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2)-18*cos(b*x+a)^3*2^(1/2)+18*cos(b*x+a)^2*2^(1/2
))*(cos(b*x+a)+1)^2/cos(b*x+a)/sin(b*x+a)^3/(d*sin(b*x+a)/cos(b*x+a))^(1/2)
*2^(1/2)
```

maxima [A] time = 0.49, size = 220, normalized size = 0.86

$$\frac{10\,\sqrt{2}\,d^{\frac{9}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+10\,\sqrt{2}\,d^{\frac{9}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+5\,\sqrt{2}\,d^{\frac{9}{2}}\log\left(d\tan(bx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/128*(10*sqrt(2)*d^(9/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*ta
n(b*x + a)))/sqrt(d)) + 10*sqrt(2)*d^(9/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqr
t(d) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + 5*sqrt(2)*d^(9/2)*log(d*tan(b*x +
 a) + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 5*sqrt(2)*d^(9/2)*log(d*t
an(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 8*(9*(d*tan(b*x +
 a))^(5/2)*d^6 + 5*sqrt(d*tan(b*x + a))*d^8)/(d^4*tan(b*x + a)^4 + 2*d^4*ta
n(b*x + a)^2 + d^4))/(b*d^5)
```

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

$$\int \frac{\sin(a+b\,x)^4}{\sqrt{d\tan(a+b\,x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^4/(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)^4/(d*tan(a + b*x))^(1/2), x)
```

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

$$\int \frac{\sin^4(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**4/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sin(a + b*x)**4/sqrt(d*tan(a + b*x)), x)
```

3.85 $\int \frac{\sin^2(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=227

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}b\sqrt{d}}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}b\sqrt{d}}-\frac{\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}b\sqrt{d}}+\log$$

```
[Out] -1/8*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)/d^(1/2)+1/8*a
rctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)/d^(1/2)-1/16*ln(d^(
1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)/d^(1/2)+1/1
6*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)/d^(
1/2)-1/2*cos(b*x+a)^2*(d*tan(b*x+a))^(1/2)/b/d
```

Rubi [A] time = 0.15, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2591, 288, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}b\sqrt{d}}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}b\sqrt{d}}-\frac{\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}b\sqrt{d}}+\log$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] -ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]]/(4*Sqrt[2]*b*Sqrt[d]) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]]/(4*Sqrt[2]*b*Sqrt[d]) -
 Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b*x]]]/(8*Sqrt
[2]*b*Sqrt[d]) + Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqrt[2]*Sqrt[d*Tan[a
+ b*x]]]/(8*Sqrt[2]*b*Sqrt[d]) - (Cos[a + b*x]^2*Sqrt[d*Tan[a + b*x]])/(2*b
*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{x^{3/2}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd} + \frac{d\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\tan(a+bx)\right)}{4b}$$

$$= -\frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd} + \frac{d\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{2b}$$

$$= -\frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd} + \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{4b} + \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x}\right.}{}$$

$$= -\frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd} + \frac{\text{Subst}\left(\int \frac{1}{d-\sqrt{2}\sqrt{d}x+x^2}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{8b} + \frac{\text{Subst}\left(\right.}{}$$

$$= -\frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}b\sqrt{d}} + \frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)+\sqrt{2}\right.}{8\sqrt{2}b\sqrt{d}}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}b\sqrt{d}} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}b\sqrt{d}} - \frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\right.}{8\sqrt{2}b\sqrt{}}$$

Mathematica [A] time = 0.64, size = 109, normalized size = 0.48

$$-\frac{\sec(a+bx)\left(\sin(a+bx)+\sin(3(a+bx))+\sqrt{\sin(2(a+bx))}\sin^{-1}(\cos(a+bx)-\sin(a+bx))-\sqrt{\sin(2(a+bx)}\right.}{8b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] -1/8*(Sec[a + b*x]*(Sin[a + b*x] + ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Sqrt
[Sin[2*(a + b*x)]] - Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*x)
]]]*Sqrt[Sin[2*(a + b*x)]] + Sin[3*(a + b*x)]))/(b*Sqrt[d*Tan[a + b*x]])
```

fricas [B] time = 61.15, size = 1442, normalized size = 6.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] -1/32*(2*sqrt(2)*b*d*(1/(b^4*d^2))^(1/4)*arctan(1/2*(sqrt(4*b^2*d*sqrt(1/(b
^4*d^2))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*c
os(b*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a)*sin(b*x + a))*sq
rt(d*sin(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*si
n(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a
)/cos(b*x + a)) + 2*sin(b*x + a)) - (sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*sin(
b*x + a) - sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a)/
cos(b*x + a)))/sin(b*x + a)) + 2*sqrt(2)*b*d*(1/(b^4*d^2))^(1/4)*arctan(1/2
*(sqrt(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3
*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b
*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b^3*
d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x
+ a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 2*sin(b*x + a)) - (sqrt(2)*b^3*d*
(1/(b^4*d^2))^(3/4)*sin(b*x + a) - sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x +
a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/sin(b*x + a)) + 2*sqrt(2)*b*d*(1/(b^
4*d^2))^(1/4)*arctan(1/2*((sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) +
 sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(4*b^2*d*sqrt(1/(b^4*d^2))
*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x +
 a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin
(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (sqrt(2)*b
^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b
*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d*cos(b*x + a)^3 - b^2*
d*cos(b*x + a))*sqrt(1/(b^4*d^2)) + 2*sin(b*x + a))/((2*cos(b*x + a)^2 - 1)
*sin(b*x + a))) + 2*sqrt(2)*b*d*(1/(b^4*d^2))^(1/4)*arctan(1/2*((sqrt(2)*b^
3*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a) + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*
x + a))*sqrt(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(
2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)
*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*s
in(b*x + a)/cos(b*x + a)) + (sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*sin(b*x + a)
 + sqrt(2)*b*(1/(b^4*d^2))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x
+ a)) + 4*(b^2*d*cos(b*x + a)^3 - b^2*d*cos(b*x + a))*sqrt(1/(b^4*d^2)) - 2
*sin(b*x + a))/((2*cos(b*x + a)^2 - 1)*sin(b*x + a))) - sqrt(2)*b*d*(1/(b^4
*d^2))^(1/4)*log(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*x + a)*sin(b*x + a) + 2*(s
qrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*(1/(b^4*d^2))^(
```

```
1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1) + sq
rt(2)*b*d*(1/(b^4*d^2))^(1/4)*log(4*b^2*d*sqrt(1/(b^4*d^2))*cos(b*x + a)*si
n(b*x + a) - 2*(sqrt(2)*b^3*d*(1/(b^4*d^2))^(3/4)*cos(b*x + a)^2 + sqrt(2)*
b*(1/(b^4*d^2))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*
x + a)) + 1) + 16*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)^2)/(b*d)
```

giac [A] time = 0.70, size = 218, normalized size = 0.96

$$\frac{\sqrt{2}\,\sqrt{|d|}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{8\,bd}+\frac{\sqrt{2}\,\sqrt{|d|}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{|d|}}\right)}{8\,bd}+\frac{\sqrt{2}\,\sqrt{|d|}\,\log\left(d\tan(bx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*sqrt(2)*sqrt(abs(d))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sqrt(
d*tan(b*x + a)))/sqrt(abs(d)))/(b*d) + 1/8*sqrt(2)*sqrt(abs(d))*arctan(-1/2
*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d
) + 1/16*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x +
 a))*sqrt(abs(d)) + abs(d))/(b*d) - 1/16*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x
 + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d) - 1/2*sqr
t(d*tan(b*x + a))*d/((d^2*tan(b*x + a)^2 + d^2)*b)
```

maple [C] time = 0.46, size = 662, normalized size = 2.92

$$\frac{(-1+\cos(bx+a))\left(i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(b}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] 1/8/b*(-1+cos(b*x+a))*(I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*
((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/si
n(b*x+a))^(1/2)-I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1
/2-1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)-EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-
EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/
```

```
2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+2*sin(b*x
+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-
1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-2*cos(b*x+a)^3*2^(1/2)+2*co
s(b*x+a)^2*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)/sin(b*x+a)^3/(d*sin(b*x+a)/
cos(b*x+a))^(1/2)*2^(1/2)
```

maxima [A] time = 0.58, size = 188, normalized size = 0.83

$$\frac{2\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)+2\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)+\sqrt{2}\,d^{\frac{5}{2}}\log\left(d\tan(bx+\right.}{16\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/16*(2*sqrt(2)*d^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(
b*x + a)))/sqrt(d)) + 2*sqrt(2)*d^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + sqrt(2)*d^(5/2)*log(d*tan(b*x + a) +
 sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - sqrt(2)*d^(5/2)*log(d*tan(b*x
+ a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 8*sqrt(d*tan(b*x + a))*d
^4/(d^2*tan(b*x + a)^2 + d^2))/(b*d^3)
```

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

$$\int \frac{\sin(a+b\,x)^2}{\sqrt{d\tan(a+b\,x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)^2/(d*tan(a + b*x))^(1/2), x)
```

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

$$\int \frac{\sin^2(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sin(a + b*x)**2/sqrt(d*tan(a + b*x)), x)
```

3.86 $\int \frac{\csc^2(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=20

$$-\frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

```
[Out] -2/3*d/b/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.04, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 30}

$$-\frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^2/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d)/(3*b*(d*Tan[a + b*x])^(3/2))
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\begin{aligned}\int \frac{\csc^2(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx &= \frac{d\,\text{Subst}\left(\int \frac{1}{x^{5/2}}\,dx, x, d\tan(a+bx)\right)}{b}\\ &= -\frac{2d}{3b(d\tan(a+bx))^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.10, size = 20, normalized size = 1.00

$$-\frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^2/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d)/(3*b*(d*Tan[a + b*x])^(3/2))
```

fricas [B] time = 0.57, size = 46, normalized size = 2.30

$$\frac{2\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos(bx+a)^2}{3\left(bd\cos(bx+a)^2-bd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)^2/(b*d*cos(b*x + a)^2 -
b*d)
```

giac [A] time = 0.79, size = 23, normalized size = 1.15

$$-\frac{2}{3\sqrt{d\tan(bx+a)}\,b\tan(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] -2/3/(sqrt(d*tan(b*x + a))*b*tan(b*x + a))
```

maple [B] time = 0.55, size = 38, normalized size = 1.90

$$-\frac{2\cos(bx+a)}{3b\sin(bx+a)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -2/3/b*cos(b*x+a)/sin(b*x+a)/(d*sin(b*x+a)/cos(b*x+a))^(1/2)
```

maxima [A] time = 0.51, size = 23, normalized size = 1.15

$$-\frac{2}{3\,\sqrt{d\tan\left(bx+a\right)}\,b\tan\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] -2/3/(sqrt(d*tan(b*x + a))*b*tan(b*x + a))
```

mupad [B] time = 3.33, size = 102, normalized size = 5.10

$$-\frac{2\,\sqrt{\frac{d\,\sin(2\,a+2\,b\,x)}{\cos(2\,a+2\,b\,x)+1}}\,\left(\cos\left(2\,a+2\,b\,x\right)+2\,\cos\left(4\,a+4\,b\,x\right)-\cos\left(6\,a+6\,b\,x\right)-2\right)}{3\,b\,d\,\left(15\,\cos\left(2\,a+2\,b\,x\right)-6\,\cos\left(4\,a+4\,b\,x\right)+\cos\left(6\,a+6\,b\,x\right)-10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^2*(d*tan(a + b*x))^(1/2)),x)
```

```
[Out] -(2*((d*sin(2*a + 2*b*x))/(cos(2*a + 2*b*x) + 1))^(1/2)*(cos(2*a + 2*b*x) +
 2*cos(4*a + 4*b*x) - cos(6*a + 6*b*x) - 2))/(3*b*d*(15*cos(2*a + 2*b*x) -
6*cos(4*a + 4*b*x) + cos(6*a + 6*b*x) - 10))
```

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

$$\int\frac{\csc^{2}\left(a+bx\right)}{\sqrt{d\tan\left(a+bx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(csc(a + b*x)**2/sqrt(d*tan(a + b*x)), x)
```

3.87 $\int \frac{\csc^4(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=43

$$-\frac{2d^3}{7b(d\tan(a+bx))^{7/2}}-\frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

```
[Out] -2/7*d^3/b/(d*tan(b*x+a))^(7/2)-2/3*d/b/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.04, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 14}

$$-\frac{2d^3}{7b(d\tan(a+bx))^{7/2}}-\frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^4/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d^3)/(7*b*(d*Tan[a + b*x])^(7/2)) - (2*d)/(3*b*(d*Tan[a + b*x])^(3/2))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\csc^4(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{d^2+x^2}{x^{9/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^2}{x^{9/2}}+\frac{1}{x^{5/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^3}{7b(d\tan(a+bx))^{7/2}} - \frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

Mathematica [A] time = 0.13, size = 40, normalized size = 0.93

$$\frac{2d(2\cos(2(a+bx))-5)\csc^2(a+bx)}{21b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^4/Sqrt[d*Tan[a + b*x]],x]
[Out] (2*d*(-5 + 2*Cos[2*(a + b*x)])*Csc[a + b*x]^2)/(21*b*(d*Tan[a + b*x])^(3/2)
)
```

fricas [A] time = 0.62, size = 70, normalized size = 1.63

$$\frac{2\left(4\cos(bx+a)^4 - 7\cos(bx+a)^2\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{21\left(bd\cos(bx+a)^4 - 2\,bd\cos(bx+a)^2 + bd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
[Out] 2/21*(4*cos(b*x + a)^4 - 7*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)
)/(b*d*cos(b*x + a)^4 - 2*b*d*cos(b*x + a)^2 + b*d)
```

giac [A] time = 1.13, size = 45, normalized size = 1.05

$$-\frac{2\left(7\,d^3\tan(bx+a)^2 + 3\,d^3\right)}{21\sqrt{d\tan(bx+a)}\,bd^3\tan(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] -2/21*(7*d^3*tan(b*x + a)^2 + 3*d^3)/(sqrt(d*tan(b*x + a))*b*d^3*tan(b*x +
a)^3)
```

maple [A] time = 0.61, size = 50, normalized size = 1.16

$$\frac{2\left(4\left(\cos^{2}\left(bx+a\right)\right)-7\right)\cos\left(bx+a\right)}{21b\sin\left(bx+a\right)^{3}\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^4/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] 2/21/b*(4*cos(b*x+a)^2-7)*cos(b*x+a)/sin(b*x+a)^3/(d*sin(b*x+a)/cos(b*x+a))
^(1/2)
```

maxima [A] time = 0.32, size = 35, normalized size = 0.81

$$-\frac{2\left(7\,d^{2}\tan\left(bx+a\right)^{2}+3\,d^{2}\right)d}{21\,\left(d\tan\left(bx+a\right)\right)^{\frac{7}{2}}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] -2/21*(7*d^2*tan(b*x + a)^2 + 3*d^2)*d/((d*tan(b*x + a))^(7/2)*b)
```

mupad [B] time = 7.19, size = 530, normalized size = 12.33

$$\frac{344\,\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}\,1{}\mathrm{i}-\mathrm{i}\right)}{{\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}+1}}}{105\,b\,d\,\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}-1\right)}+\frac{40\,\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}\,1{}\mathrm{i}-\mathrm{i}\right)}{{\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}+1}}}{21\,b\,d\,{\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}-1\right)}^2}+\frac{24\,\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}\dots\right)}{{\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}\dots}}}{35\,b\,d\,{\left({\mathrm{e}}^{a\,2{}\mathrm{i}+b\,x\,2{}\mathrm{i}}-1\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^4*(d*tan(a + b*x))^(1/2)),x)
```

```
[Out] (344*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i
+ b*x*2i) + 1))^(1/2))/(105*b*d*(exp(a*2i + b*x*2i) - 1)) + (40*(exp(a*2i +
 b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^
(1/2))/(21*b*d*(exp(a*2i + b*x*2i) - 1)^2) + (24*(exp(a*2i + b*x*2i) + 1)*(
-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(35*b*d*
(exp(a*2i + b*x*2i) - 1)^3) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*
x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*304i)/(105*b*d*(exp(a*2i +
b*x*2i)*1i - 1i)) + (16*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1
```

```
i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(7*b*d*(exp(a*2i + b*x*2i)*1i - 1
i)^2) + ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a
*2i + b*x*2i) + 1))^(1/2)*144i)/(35*b*d*(exp(a*2i + b*x*2i)*1i - 1i)^3) - (
16*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i +
b*x*2i) + 1))^(1/2))/(7*b*d*(exp(a*2i + b*x*2i)*1i - 1i)^4)
```

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

$$\int \frac{\csc^4(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**4/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(csc(a + b*x)**4/sqrt(d*tan(a + b*x)), x)
```

3.88 $\int \frac{\csc^6(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=65

$$-\frac{2d^5}{11b(d\tan(a+bx))^{11/2}}-\frac{4d^3}{7b(d\tan(a+bx))^{7/2}}-\frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

```
[Out] -2/11*d^5/b/(d*tan(b*x+a))^(11/2)-4/7*d^3/b/(d*tan(b*x+a))^(7/2)-2/3*d/b/(d
*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 270}

$$-\frac{2d^5}{11b(d\tan(a+bx))^{11/2}}-\frac{4d^3}{7b(d\tan(a+bx))^{7/2}}-\frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^6/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d^5)/(11*b*(d*Tan[a + b*x])^(11/2)) - (4*d^3)/(7*b*(d*Tan[a + b*x])^(7/
2)) - (2*d)/(3*b*(d*Tan[a + b*x])^(3/2))
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\csc^6(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx = \frac{d\,\mathrm{Subst}\left(\int \frac{\left(d^2+x^2\right)^2}{x^{13/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\mathrm{Subst}\left(\int \left(\frac{d^4}{x^{13/2}}+\frac{2d^2}{x^{9/2}}+\frac{1}{x^{5/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^5}{11b(d\tan(a+bx))^{11/2}} - \frac{4d^3}{7b(d\tan(a+bx))^{7/2}} - \frac{2d}{3b(d\tan(a+bx))^{3/2}}$$

Mathematica [A] time = 0.16, size = 50, normalized size = 0.77

$$\frac{2d(28\cos(2(a+bx)) - 4\cos(4(a+bx)) - 45)\csc^4(a+bx)}{231b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^6/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (2*d*(-45 + 28*Cos[2*(a + b*x)] - 4*Cos[4*(a + b*x)])*Csc[a + b*x]^4)/(231*
b*(d*Tan[a + b*x])^(3/2))
```

fricas [A] time = 0.75, size = 93, normalized size = 1.43

$$\frac{2\left(32\cos(bx+a)^6 - 88\cos(bx+a)^4 + 77\cos(bx+a)^2\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{231\left(bd\cos(bx+a)^6 - 3\,bd\cos(bx+a)^4 + 3\,bd\cos(bx+a)^2 - bd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] 2/231*(32*cos(b*x + a)^6 - 88*cos(b*x + a)^4 + 77*cos(b*x + a)^2)*sqrt(d*si
n(b*x + a)/cos(b*x + a))/(b*d*cos(b*x + a)^6 - 3*b*d*cos(b*x + a)^4 + 3*b*d
*cos(b*x + a)^2 - b*d)
```

giac [A] time = 1.44, size = 58, normalized size = 0.89

$$-\frac{2\left(77\,d^5\tan(bx+a)^4 + 66\,d^5\tan(bx+a)^2 + 21\,d^5\right)}{231\sqrt{d\tan(bx+a)}\,bd^5\tan(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] -2/231*(77*d^5*tan(b*x + a)^4 + 66*d^5*tan(b*x + a)^2 + 21*d^5)/(sqrt(d*tan
(b*x + a))*b*d^5*tan(b*x + a)^5)
```

maple [A] time = 0.68, size = 60, normalized size = 0.92

$$-\frac{2\left(32\left(\cos^{4}\left(bx+a\right)\right)-88\left(\cos^{2}\left(bx+a\right)\right)+77\right)\cos\left(bx+a\right)}{231b\sin\left(bx+a\right)^{5}\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^6/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -2/231/b*(32*cos(b*x+a)^4-88*cos(b*x+a)^2+77)*cos(b*x+a)/sin(b*x+a)^5/(d*si
n(b*x+a)/cos(b*x+a))^(1/2)
```

maxima [A] time = 0.32, size = 48, normalized size = 0.74

$$-\frac{2\left(77\,d^{4}\tan\left(bx+a\right)^{4}+66\,d^{4}\tan\left(bx+a\right)^{2}+21\,d^{4}\right)d}{231\,\left(d\tan\left(bx+a\right)\right)^{\frac{11}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] -2/231*(77*d^4*tan(b*x + a)^4 + 66*d^4*tan(b*x + a)^2 + 21*d^4)*d/((d*tan(b
*x + a))^(11/2)*b)
```

mupad [B] time = 12.40, size = 831, normalized size = 12.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^6*(d*tan(a + b*x))^(1/2)),x)
```

```
[Out] ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*
x*2i) + 1))^(1/2)*44864i)/(10395*b*d*(exp(a*2i + b*x*2i)*1i - 1i)) - (128*(
exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*
2i) + 1))^(1/2))/(35*b*d*(exp(a*2i + b*x*2i) - 1)^2) - (7136*(exp(a*2i + b*
x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/
2))/(1155*b*d*(exp(a*2i + b*x*2i) - 1)^3) - (1216*(exp(a*2i + b*x*2i) + 1)*
(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(231*b*
d*(exp(a*2i + b*x*2i) - 1)^4) - (160*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2
```

```
i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(99*b*d*(exp(a*2i +
b*x*2i) - 1)^5) - (41984*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*
1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(10395*b*d*(exp(a*2i + b*x*2i) -
 1)) - (3904*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(e
xp(a*2i + b*x*2i) + 1))^(1/2))/(1155*b*d*(exp(a*2i + b*x*2i)*1i - 1i)^2) -
((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*
x*2i) + 1))^(1/2)*1088i)/(165*b*d*(exp(a*2i + b*x*2i)*1i - 1i)^3) + (320*(e
xp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2
i) + 1))^(1/2))/(21*b*d*(exp(a*2i + b*x*2i)*1i - 1i)^4) + ((exp(a*2i + b*x*
2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)
*1600i)/(99*b*d*(exp(a*2i + b*x*2i)*1i - 1i)^5) - (64*(exp(a*2i + b*x*2i) +
 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(11
*b*d*(exp(a*2i + b*x*2i)*1i - 1i)^6)
```

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

$$\int \frac{\csc^6(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**6/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(csc(a + b*x)**6/sqrt(d*tan(a + b*x)), x)
```

3.89 $\int \frac{\sin^5(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=107

$$-\frac{d\sin^5(a+bx)}{5b(d\tan(a+bx))^{3/2}}-\frac{7d\sin^3(a+bx)}{30b(d\tan(a+bx))^{3/2}}+\frac{7\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{20b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

```
[Out] -7/20*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+
b*x),2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)-7/30*d
*sin(b*x+a)^3/b/(d*tan(b*x+a))^(3/2)-1/5*d*sin(b*x+a)^5/b/(d*tan(b*x+a))^(3
/2)
```

Rubi [A] time = 0.13, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2598, 2601, 2572, 2639}

$$-\frac{d\sin^5(a+bx)}{5b(d\tan(a+bx))^{3/2}}-\frac{7d\sin^3(a+bx)}{30b(d\tan(a+bx))^{3/2}}+\frac{7\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{20b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^5/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-7*d*Sin[a + b*x]^3)/(30*b*(d*Tan[a + b*x])^(3/2)) - (d*Sin[a + b*x]^5)/(5
*b*(d*Tan[a + b*x])^(3/2)) + (7*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/
(20*b*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
```

```
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^5(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx &= -\frac{d\sin^5(a+bx)}{5b(d\tan(a+bx))^{3/2}}+\frac{7}{10}\int \frac{\sin^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx \\
&= -\frac{7d\sin^3(a+bx)}{30b(d\tan(a+bx))^{3/2}}-\frac{d\sin^5(a+bx)}{5b(d\tan(a+bx))^{3/2}}+\frac{7}{20}\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx \\
&= -\frac{7d\sin^3(a+bx)}{30b(d\tan(a+bx))^{3/2}}-\frac{d\sin^5(a+bx)}{5b(d\tan(a+bx))^{3/2}}+\frac{\left(7\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\,\sqrt{\sin(\ldots}}{20\sqrt{\cos(a+bx)}\,\sqrt{d\tan(a+b\ldots}} \\
&= -\frac{7d\sin^3(a+bx)}{30b(d\tan(a+bx))^{3/2}}-\frac{d\sin^5(a+bx)}{5b(d\tan(a+bx))^{3/2}}+\frac{(7\sin(a+bx))\int \sqrt{\sin(2a+2bx)}\,dx}{20\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+bx)}} \\
&= -\frac{7d\sin^3(a+bx)}{30b(d\tan(a+bx))^{3/2}}-\frac{d\sin^5(a+bx)}{5b(d\tan(a+bx))^{3/2}}+\frac{7E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{20b\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+bx)}}
\end{aligned}$$

Mathematica [C] time = 0.87, size = 86, normalized size = 0.80

$$\frac{\sin(a+bx)\left(28\tan(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)-20\sin(2(a+bx))+3\sin(4(a+bx))\right)}{120b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^5/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (Sin[a + b*x]*(-20*Sin[2*(a + b*x)] + 3*Sin[4*(a + b*x)] + 28*Hypergeometri
c2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sqrt[Sec[a + b*x]^2]*Tan[a + b*x]))/(1
20*b*Sqrt[d*Tan[a + b*x]])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(\cos\left(bx+a\right)^4-2\,\cos\left(bx+a\right)^2+1\right)\sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)}{d\tan\left(bx+a\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^5/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((cos(b*x + a)^4 - 2*cos(b*x + a)^2 + 1)*sqrt(d*tan(b*x + a))*sin(b
*x + a)/(d*tan(b*x + a)), x)
```

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

$$\int \frac{\sin(bx+a)^5}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^5/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^5/sqrt(d*tan(b*x + a)), x)
```

maple [B] time = 0.54, size = 550, normalized size = 5.14

$$-\frac{(-1+\cos(bx+a))^2\left(12\sqrt{2}\,\left(\cos^6(bx+a)\right)-38\left(\cos^4(bx+a)\right)\sqrt{2}-21\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^5/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/120/b*(-1+cos(b*x+a))^2*(12*2^(1/2)*cos(b*x+a)^6-38*cos(b*x+a)^4*2^(1/2)
-21*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF
(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+42*((-1+cos(b*x+
a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticE(((1-cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-21*((-1+cos(b*x+a))/sin(b*x+a))^(
1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)
,1/2*2^(1/2))+42*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*Ellipti
cE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+47*cos(b*x+a)^
2*2^(1/2)-21*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)/sin(b*x+a)^4/(
d*sin(b*x+a)/cos(b*x+a))^(1/2)*2^(1/2)
```

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

$$\int \frac{\sin(bx+a)^5}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^5/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)^5/sqrt(d*tan(b*x + a)), x)
```

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

$$\int \frac{\sin(a+bx)^5}{\sqrt{d\tan(a+bx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^5/(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)^5/(d*tan(a + b*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**5/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Timed out
```

3.90 $\int \frac{\sin^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=79

$$\frac{\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{d\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}$$

```
[Out] -1/2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b
*x),2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)-1/3*d*s
in(b*x+a)^3/b/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.09, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2598, 2601, 2572, 2639}

$$\frac{\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{d\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] -(d*Sin[a + b*x]^3)/(3*b*(d*Tan[a + b*x])^(3/2)) + (EllipticE[a - Pi/4 + b*
x, 2]*Sin[a + b*x])/(2*b*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx &= -\frac{d\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}+\frac{1}{2}\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx\\
&= -\frac{d\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}+\frac{\sqrt{\sin(a+bx)}\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}\,dx}{2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{d\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}+\frac{\sin(a+bx)\int \sqrt{\sin(2a+2bx)}\,dx}{2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{d\sin^3(a+bx)}{3b(d\tan(a+bx))^{3/2}}+\frac{E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{2b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}
\end{aligned}$$

Mathematica [C] time = 0.76, size = 98, normalized size = 1.24

$$\frac{\sqrt{d\tan(a+bx)}\left(4\tan(a+bx)\sec(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)-(\sin(a+bx)+\sin(3(a+bx)))\sqrt{\sec^2(a+bx)}\right)}{12bd\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (Sqrt[d*Tan[a + b*x]]*(-(Sqrt[Sec[a + b*x]^2]*(Sin[a + b*x] + Sin[3*(a + b*
x)])) + 4*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x]*Ta
n[a + b*x]))/(12*b*d*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(\cos\left(bx+a\right)^2-1\right)\sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)}{d\tan\left(bx+a\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(cos(b*x + a)^2 - 1)*sqrt(d*tan(b*x + a))*sin(b*x + a)/(d*tan(b*x
 + a)), x)
```

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

$$\int \frac{\sin(bx+a)^3}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^3/sqrt(d*tan(b*x + a)), x)
```

maple [B] time = 0.52, size = 537, normalized size = 6.80

$$-\frac{(-1+\cos(bx+a))^2\left(6\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\cos(bx+a)\,\mathrm{EllipticE}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/12/b*(-1+cos(b*x+a))^2*(6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*
x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
1/2)*cos(b*x+a)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*
2^(1/2))-3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/s
in(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*El
lipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*cos(b*x
+a)^4*2^(1/2)+6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*Elliptic
E(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-3*((-1+cos(b*x+
a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/
sin(b*x+a))^(1/2),1/2*2^(1/2))+5*cos(b*x+a)^2*2^(1/2)-3*cos(b*x+a)*2^(1/2))
*(cos(b*x+a)+1)^2/sin(b*x+a)^4/(d*sin(b*x+a)/cos(b*x+a))^(1/2)/cos(b*x+a)*2
^(1/2)
```

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

$$\int \frac{\sin(bx+a)^3}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)^3/sqrt(d*tan(b*x + a)), x)
```

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

$$\int \frac{\sin \left(a+b\,x\right)^3}{\sqrt{d\,\tan \left(a+b\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)^3/(d*tan(a + b*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Timed out
```

3.91 $\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=47

$$\frac{\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

```
[Out] -(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),
2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2601, 2572, 2639}

$$\frac{\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(b*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[
d*Tan[a + b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx = \frac{\sqrt{\sin(a+bx)}\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}\,dx}{\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}$$
$$= \frac{\sin(a+bx)\int \sqrt{\sin(2a+2bx)}\,dx}{\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$
$$= \frac{E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

Mathematica [C] time = 0.13, size = 60, normalized size = 1.28

$$\frac{2\sin(a+bx)\sqrt{\sec^2(a+bx)}\sqrt{d\tan(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)}{3bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (2*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sqrt[Sec[a + b*x]^2]*S
in[a + b*x]*Sqrt[d*Tan[a + b*x]])/(3*b*d)
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan(bx+a)}\sin(bx+a)}{d\tan(bx+a)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*sin(b*x + a)/(d*tan(b*x + a)), x)
```

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

$$\int \frac{\sin(bx+a)}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)/sqrt(d*tan(b*x + a)), x)
```

maple [B] time = 0.43, size = 523, normalized size = 11.13

$$-\frac{(-1+\cos(bx+a))^2\left(2\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\cos(bx+a)\,\mathrm{EllipticE}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/2/b*(-1+cos(b*x+a))^2*(2*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x
+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2)*cos(b*x+a)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2
^(1/2))-((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(
b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Ellip
ticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+2*((-1+cos(b
*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-
cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2),1/2*2^(1/2))-((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2
))+cos(b*x+a)^2*2^(1/2)-cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)/sin
(b*x+a)^4/(d*sin(b*x+a)/cos(b*x+a))^(1/2)*2^(1/2)
```

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

$$\int\frac{\sin(bx+a)}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)/sqrt(d*tan(b*x + a)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{\sin(a+b\,x)}{\sqrt{d\tan(a+b\,x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(d*tan(a + b*x))^(1/2),x)
```

```
[Out] int(sin(a + b*x)/(d*tan(a + b*x))^(1/2), x)
```

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

$$\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(sin(a + b*x)/sqrt(d*tan(a + b*x)), x)
```

3.92 $\int \frac{\csc(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=72

$$-\frac{2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}}-\frac{2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*cos(b*x+a)/b/(d*tan(b*x+a))^(1/2)+2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/
4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2*a)^
(1/2)/(d*tan(b*x+a))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2601, 2570, 2572, 2639}

$$-\frac{2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}}-\frac{2\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*Cos[a + b*x])/(b*Sqrt[d*Tan[a + b*x]]) - (2*EllipticE[a - Pi/4 + b*x, 2
]*Sin[a + b*x])/(b*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2570

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[((b*Cos[e + f*x])^(n + 1)*(a*Sin[e + f*x])^(m + 1))/(
a*b*f*(m + 1)), x] + Dist[(m + n + 2)/(a^2*(m + 1)), Int[(b*Cos[e + f*x])^n
*(a*Sin[e + f*x])^(m + 2), x], x] /; FreeQ[{a, b, e, f, n}, x] && LtQ[m, -1
] && IntegersQ[2*m, 2*n]
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\csc(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx &= \frac{\sqrt{\sin(a+bx)}\int \frac{\sqrt{\cos(a+bx)}}{\sin^{\frac{3}{2}}(a+bx)}\,dx}{\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}} - \frac{\left(2\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}\,dx}{\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}} - \frac{(2\sin(a+bx))\int \sqrt{\sin(2a+2bx)}\,dx}{\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2\cos(a+bx)}{b\sqrt{d\tan(a+bx)}} - \frac{2E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}
\end{aligned}
$$

Mathematica [C] time = 0.32, size = 69, normalized size = 0.96

$$
-\frac{2\cos(a+bx)\left(2\tan^2(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+3\right)}{3b\sqrt{d\tan(a+bx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*Cos[a + b*x]*(3 + 2*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*S
qrt[Sec[a + b*x]^2]*Tan[a + b*x]^2))/(3*b*Sqrt[d*Tan[a + b*x]])
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$
\operatorname{integral}\left(\frac{\sqrt{d\tan(bx+a)}\,\csc(bx+a)}{d\tan(bx+a)},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)/(d*tan(b*x + a)), x)
```

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

$$\int \frac{\csc(bx+a)}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)/sqrt(d*tan(b*x + a)), x)
```

maple [B] time = 0.55, size = 482, normalized size = 6.69

$$\frac{\left(2\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\cos(bx+a)\,\mathrm{EllipticE}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] 1/b*(2*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b
*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Ellipt
icE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-((-1+cos(b*x+
a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+2*((-1+cos(b*x+a))/sin(b*x+a))^(1
/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a)
)/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),
1/2*2^(1/2))-((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))
/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticF((
(1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-cos(b*x+a)*2^(1/2)
)/(d*sin(b*x+a)/cos(b*x+a))^(1/2)/cos(b*x+a)*2^(1/2)
```

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

$$\int \frac{\csc(bx+a)}{\sqrt{d\tan(bx+a)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(csc(b*x + a)/sqrt(d*tan(b*x + a)), x)
```

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

$$\int \frac{1}{\sin\left(a+b\,x\right)\,\sqrt{d\,\tan\left(a+b\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)*(d*tan(a + b*x))^(1/2)),x)
[Out] int(1/(sin(a + b*x)*(d*tan(a + b*x))^(1/2)), x)
```

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

$$\int \frac{\csc\left(a+bx\right)}{\sqrt{d\tan\left(a+bx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))**(1/2),x)
[Out] Integral(csc(a + b*x)/sqrt(d*tan(a + b*x)), x)
```

3.93 $\int \frac{\csc^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$

Optimal. Leaf size=102

$$-\frac{4\cos(a+bx)}{5b\sqrt{d\tan(a+bx)}}-\frac{2d\csc(a+bx)}{5b(d\tan(a+bx))^{3/2}}-\frac{4\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{5b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

```
[Out] -4/5*cos(b*x+a)/b/(d*tan(b*x+a))^(1/2)+4/5*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(
a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*sin(b*x+a)/b/sin(2*b*x+2
*a)^(1/2)/(d*tan(b*x+a))^(1/2)-2/5*d*csc(b*x+a)/b/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.13, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2599, 2601, 2570, 2572, 2639}

$$-\frac{4\cos(a+bx)}{5b\sqrt{d\tan(a+bx)}}-\frac{2d\csc(a+bx)}{5b(d\tan(a+bx))^{3/2}}-\frac{4\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{5b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^3/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (-2*d*Csc[a + b*x])/(5*b*(d*Tan[a + b*x])^(3/2)) - (4*Cos[a + b*x])/(5*b*Sq
rt[d*Tan[a + b*x]]) - (4*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(5*b*Sq
rt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2570

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[((b*Cos[e + f*x])^(n + 1)*(a*Sin[e + f*x])^(m + 1))/(
a*b*f*(m + 1)), x] + Dist[(m + n + 2)/(a^2*(m + 1)), Int[(b*Cos[e + f*x])^n
*(a*Sin[e + f*x])^(m + 2), x], x] /; FreeQ[{a, b, e, f, n}, x] && LtQ[m, -1
] && IntegersQ[2*m, 2*n]
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
```

```
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\csc^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx &= -\frac{2d\csc(a+bx)}{5b(d\tan(a+bx))^{3/2}}+\frac{2}{5}\int \frac{\csc(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx\\
&= -\frac{2d\csc(a+bx)}{5b(d\tan(a+bx))^{3/2}}+\frac{\left(2\sqrt{\sin(a+bx)}\right)\int \frac{\sqrt{\cos(a+bx)}}{\sin^{\frac{3}{2}}(a+bx)}\,dx}{5\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2d\csc(a+bx)}{5b(d\tan(a+bx))^{3/2}}-\frac{4\cos(a+bx)}{5b\sqrt{d\tan(a+bx)}}-\frac{\left(4\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+
}{5\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2d\csc(a+bx)}{5b(d\tan(a+bx))^{3/2}}-\frac{4\cos(a+bx)}{5b\sqrt{d\tan(a+bx)}}-\frac{(4\sin(a+bx))\int \sqrt{\sin(2a+2bx)}\,dx}{5\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2d\csc(a+bx)}{5b(d\tan(a+bx))^{3/2}}-\frac{4\cos(a+bx)}{5b\sqrt{d\tan(a+bx)}}-\frac{4E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{5b\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}
\end{aligned}$$

Mathematica [C] time = 0.68, size = 104, normalized size = 1.02

$$\frac{6(\cos(2(a+bx))-2)\cot(a+bx)\csc(a+bx)\sqrt{\sec^2(a+bx)}-8\tan^2(a+bx)\sec(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+b
}{15b\sqrt{\sec^2(a+bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^3/Sqrt[d*Tan[a + b*x]],x]
```

```
[Out] (6*(-2 + Cos[2*(a + b*x)])*Cot[a + b*x]*Csc[a + b*x]*Sqrt[Sec[a + b*x]^2] -
 8*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x]*Tan[a + b
*x]^2)/(15*b*Sqrt[Sec[a + b*x]^2]*Sqrt[d*Tan[a + b*x]])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d \tan\left(bx+a\right)} \csc\left(bx+a\right)^{3}}{d \tan\left(bx+a\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)^3/(d*tan(b*x + a)), x)
```

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

$$\int \frac{\csc\left(bx+a\right)^{3}}{\sqrt{d \tan\left(bx+a\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)^3/sqrt(d*tan(b*x + a)), x)
```

maple [B] time = 0.62, size = 972, normalized size = 9.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^3/(d*tan(b*x+a))^(1/2),x)
```

```
[Out] -1/5/b*(4*cos(b*x+a)^3*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*E
llipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*cos(b*
x+a)^3*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+4*cos(b*x+a)^2*((1-cos(b
*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*cos(b*x+a)^2*((1-cos(b*x+a)+sin(b*x+a)
)/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(
b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
```

```
(1/2),1/2*2^(1/2))-4*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin
(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos
(b*x+a)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))
+2*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF(
((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*cos(b*x+a)^3*2^
(1/2)-4*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(
b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+2*((-1+cos(b*x+a))/sin(
b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2),1/2*2^(1/2))+cos(b*x+a)^2*2^(1/2)+2*cos(b*x+a)*2^(1/2))/cos(b*x+a
)/sin(b*x+a)^2/(d*sin(b*x+a)/cos(b*x+a))^(1/2)*2^(1/2)
```

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

$$\int \frac{\csc\left(bx+a\right)^{3}}{\sqrt{d\tan\left(bx+a\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(csc(b*x + a)^3/sqrt(d*tan(b*x + a)), x)
```

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

$$\int \frac{1}{\sin\left(a+b\,x\right)^{3}\,\sqrt{d\,\tan\left(a+b\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^3*(d*tan(a + b*x))^(1/2)),x)
```

```
[Out] int(1/(sin(a + b*x)^3*(d*tan(a + b*x))^(1/2)), x)
```

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

$$\int \frac{\csc^{3}\left(a+bx\right)}{\sqrt{d\tan\left(a+bx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3/(d*tan(b*x+a))**(1/2),x)
```

```
[Out] Integral(csc(a + b*x)**3/sqrt(d*tan(a + b*x)), x)
```

3.94 $\int \frac{\sin^4(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=257

$$-\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{3/2}}+\frac{3\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,bd^{3/2}}+\frac{3\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right.}{64\sqrt{2}\,bd^{3/2}}$$

```
[Out] -3/64*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)+3/64
*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)+3/128*ln(
d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)*2^(1/2)-
3/128*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)
*2^(1/2)+3/16*cos(b*x+a)^2*(d*tan(b*x+a))^(3/2)/b/d^3-1/4*cos(b*x+a)^4*(d*t
an(b*x+a))^(3/2)/b/d^3
```

Rubi [A] time = 0.18, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {2591, 288, 290, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{3/2}}+\frac{3\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,bd^{3/2}}+\frac{3\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right.}{64\sqrt{2}\,bd^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^4/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-3*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]*b*d^(3/
2)) + (3*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]*b*
d^(3/2)) + (3*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b
*x]]])/(64*Sqrt[2]*b*d^(3/2)) - (3*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqr
t[2]*Sqrt[d*Tan[a + b*x]]])/(64*Sqrt[2]*b*d^(3/2)) + (3*Cos[a + b*x]^2*(d*T
an[a + b*x])^(3/2))/(16*b*d^3) - (Cos[a + b*x]^4*(d*Tan[a + b*x])^(3/2))/(4
*b*d^3)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
```

```
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sin^4(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{x^{5/2}}{\left(d^2+x^2\right)^3}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^4(a+bx)(d\tan(a+bx))^{3/2}}{4bd^3} + \frac{(3d)\,\text{Subst}\left(\int \frac{\sqrt{x}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{8b}$$

$$= \frac{3\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd^3} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{3/2}}{4bd^3} + \frac{3\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,d\right.}{32}$$

$$= \frac{3\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd^3} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{3/2}}{4bd^3} + \frac{3\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,d\right.}{1}$$

$$= \frac{3\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd^3} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{3/2}}{4bd^3} - \frac{3\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,d\right.}{3}$$

$$= \frac{3\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{16bd^3} - \frac{\cos^4(a+bx)(d\tan(a+bx))^{3/2}}{4bd^3} + \frac{3\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{}}{-d-\sqrt{2}}\right.}{}$$

$$= \frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{64\sqrt{2}\,bd^{3/2}} - \frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)+\right.}{64\sqrt{2}\,bd^{3/2}}$$

$$= -\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{3/2}} + \frac{3\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{3/2}} + \frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a\right.}{64}$$

Mathematica [A] time = 0.35, size = 123, normalized size = 0.48

$$\frac{\csc(a+bx)\sqrt{d\tan(a+bx)}\left(\cos(a+bx)-2\cos(3(a+bx))+\cos(5(a+bx))-3\sqrt{\sin(2(a+bx))}\sin^{-1}(\cos(a+b\right.}{64bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^4/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (Csc[a + b*x]*(Cos[a + b*x] - 2*Cos[3*(a + b*x)] + Cos[5*(a + b*x)] - 3*Arc
Sin[Cos[a + b*x] - Sin[a + b*x]]*Sqrt[Sin[2*(a + b*x)]] - 3*Log[Cos[a + b*x
] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*x)]]]*Sqrt[Sin[2*(a + b*x)]])*Sqrt[d*T
an[a + b*x]])/(64*b*d^2)
```

fricas [B] time = 103.51, size = 1871, normalized size = 7.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/512*(12*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*arctan((sqrt(4*b^2*d^3*sqrt(1/(
b^4*d^6))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4
)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^
2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*(b^2*d^3*sqrt(1/(b^4*d^6)) + 2*co
s(b*x + a)*sin(b*x + a) + (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)
^2 + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(
b*x + a)/cos(b*x + a))) + (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)
*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(
b*x + a)/cos(b*x + a)))/(2*cos(b*x + a)^2 - 1)) + 12*sqrt(2)*b*d^2*(1/(b^4*
d^6))^(1/4)*arctan(-(sqrt(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x
+ a) + 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + s
qrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x
+ a)) + 1)*(b^2*d^3*sqrt(1/(b^4*d^6)) + 2*cos(b*x + a)*sin(b*x + a) - (sqrt
(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d*(1/(b^4*d^6))^
(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) - (sqrt
(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/
(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*cos(
b*x + a)^2 - 1)) + 12*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*arctan(1/2*((sqrt(2
)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4
)*sin(b*x + a))*sqrt(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a)
+ 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2
)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))
 + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a)) - (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3
/4)*cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(d*sin
(b*x + a)/cos(b*x + a)) + 4*(b^2*d^3*cos(b*x + a)^3 - b^2*d^3*cos(b*x + a))
*sqrt(1/(b^4*d^6)) - 2*sin(b*x + a))/((2*cos(b*x + a)^2 - 1)*sin(b*x + a)))
 + 12*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*arctan(1/2*((sqrt(2)*b^3*d^4*(1/(b^
4*d^6))^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*
sqrt(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3
*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^
6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin
(b*x + a)/cos(b*x + a)) - (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)
 + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*
x + a)) - 4*(b^2*d^3*cos(b*x + a)^3 - b^2*d^3*cos(b*x + a))*sqrt(1/(b^4*d^6
)) + 2*sin(b*x + a))/((2*cos(b*x + a)^2 - 1)*sin(b*x + a))) - 3*sqrt(2)*b*d
^2*(1/(b^4*d^6))^(1/4)*log(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x
 + a) + 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) +
sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x
 + a)) + 1) + 3*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*log(4*b^2*d^3*sqrt(1/(b^4
*d^6))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*c
os(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*
```

```
sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1) - 3*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4
)*log(1/4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) + 1/8*(sqrt(2
)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b
^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1/16) +
3*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*log(1/4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b
*x + a)*sin(b*x + a) - 1/8*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a
)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin
(b*x + a)/cos(b*x + a)) + 1/16) - 32*(4*cos(b*x + a)^3 - 3*cos(b*x + a))*sq
rt(d*sin(b*x + a)/cos(b*x + a))*sin(b*x + a))/(b*d^2)
```

giac [A] time = 1.44, size = 257, normalized size = 1.00

$$\frac{\frac{6\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{bd^2}+\frac{6\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{bd^2}-\frac{3\sqrt{2}|d|^{\frac{3}{2}}\log\left(d\tan(bx+a)+\sqrt{2}\sqrt{d\tan(bx+a)}\sqrt{|d}\right.}{bd^2}}{128\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 1/128*(6*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*
sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d^2) + 6*sqrt(2)*abs(d)^(3/2)*arctan
(-1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))
/(b*d^2) - 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b
*x + a))*sqrt(abs(d)) + abs(d))/(b*d^2) + 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(
b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d^2) + 8*
(3*sqrt(d*tan(b*x + a))*d^3*tan(b*x + a)^3 - sqrt(d*tan(b*x + a))*d^3*tan(b
*x + a))/((d^2*tan(b*x + a)^2 + d^2)^2*b))/d
```

maple [C] time = 0.48, size = 550, normalized size = 2.14

$$-\frac{(-1+\cos(bx+a))\left(3i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1-}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^4/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/64/b*(-1+cos(b*x+a))*(3*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)-3*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/
2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x
```

```
+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+8*cos(b
*x+a)^4*2^(1/2)-8*cos(b*x+a)^3*2^(1/2)-3*EllipticPi(((1-cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(
1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)-3*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+
a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2)-6*cos(b*x+a)^2*2^(1/2)+6*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)
^2/sin(b*x+a)/(d*sin(b*x+a)/cos(b*x+a))^(3/2)*2^(1/2)
```

maxima [A] time = 0.65, size = 225, normalized size = 0.88

$$\frac{3\,d^4\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(d\tan(bx+a)+\sqrt{2}\,\sqrt{d\tan(bx+a)}\,\sqrt{d}+d\right)}{\sqrt{d}}+\right.}{128\,bd^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/128*(3*d^4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(
b*x + a)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(b*x + a) +
 sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(b*x
+ a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d)) + 8*(3*(d*tan(b*x
 + a))^(7/2)*d^4 - (d*tan(b*x + a))^(3/2)*d^6)/(d^4*tan(b*x + a)^4 + 2*d^4*
tan(b*x + a)^2 + d^4))/(b*d^5)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^4}{{\left(d\,\tan\left(a+b\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^4/(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(sin(a + b*x)^4/(d*tan(a + b*x))^(3/2), x)
```

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

$$\int \frac{\sin^{4}{\left(a + bx \right)}}{\left(d \tan{\left(a + bx \right)}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**4/(d*tan(b*x+a))**(3/2),x)
[Out] Integral(sin(a + b*x)**4/(d*tan(a + b*x))**(3/2), x)
```

3.95 $\int \frac{\sin^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=227

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}bd^{3/2}}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}bd^{3/2}}+\frac{\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}bd^{3/2}}-\text{lo}$$

```
[Out] -1/8*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)+1/8*a
rctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)+1/16*ln(d^(
1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)*2^(1/2)-1/1
6*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)*2^(
1/2)+1/2*cos(b*x+a)^2*(d*tan(b*x+a))^(3/2)/b/d^3
```

Rubi [A] time = 0.16, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2591, 290, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}bd^{3/2}}+\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}bd^{3/2}}+\frac{\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}bd^{3/2}}-\text{lo}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]]/(4*Sqrt[2]*b*d^(3/2)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]]/(4*Sqrt[2]*b*d^(3/2)) +
 Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b*x]]]/(8*Sqrt
[2]*b*d^(3/2)) - Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqrt[2]*Sqrt[d*Tan[a
+ b*x]]]/(8*Sqrt[2]*b*d^(3/2)) + (Cos[a + b*x]^2*(d*Tan[a + b*x])^(3/2))/(2
*b*d^3)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
```

]

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{\sqrt{x}}{\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= \frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd^3} + \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\tan(a+bx)\right)}{4bd}$$

$$= \frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd^3} + \frac{\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{2bd}$$

$$= \frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd^3} - \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{4bd} + \frac{\text{Subst}\left(\int \frac{}{}\right.}{}$$

$$= \frac{\cos^2(a+bx)(d\tan(a+bx))^{3/2}}{2bd^3} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}bd^{3/2}} + \frac{\text{Su}}{}$$

$$= \frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}bd^{3/2}} - \frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)+\sqrt{}\right.}{8\sqrt{2}bd^{3/2}}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}bd^{3/2}} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}bd^{3/2}} + \frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+b\right.}{8\sqrt{2}}$$

Mathematica [A] time = 0.25, size = 105, normalized size = 0.46

$$-\frac{\sqrt{\sin(2(a+bx))}\sqrt{d\tan(a+bx)}\left(-2\sqrt{\sin(2(a+bx))}+\csc(a+bx)\sin^{-1}(\cos(a+bx)-\sin(a+bx))+\csc(a+\right.}{8bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -1/8*((ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Csc[a + b*x] + Csc[a + b*x]*Log[
Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*x)]]] - 2*Sqrt[Sin[2*(a + b
*x)]])*Sqrt[Sin[2*(a + b*x)]]*Sqrt[d*Tan[a + b*x]])/(b*d^2)
```

fricas [B] time = 104.13, size = 1856, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/64*(4*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*arctan((sqrt(4*b^2*d^3*sqrt(1/(b^
4*d^6))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*
cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)
*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*(b^2*d^3*sqrt(1/(b^4*d^6)) + 2*cos(
b*x + a)*sin(b*x + a) + (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)^2
 + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*
x + a)/cos(b*x + a))) + (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*s
in(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*
x + a)/cos(b*x + a)))/(2*cos(b*x + a)^2 - 1)) + 4*sqrt(2)*b*d^2*(1/(b^4*d^6
))^(1/4)*arctan(-(sqrt(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a
) + 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt
(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a
)) + 1)*(b^2*d^3*sqrt(1/(b^4*d^6)) + 2*cos(b*x + a)*sin(b*x + a) - (sqrt(2)
*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d*(1/(b^4*d^6))^(1/
4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) - (sqrt(2)
*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^
4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*cos(b*x
 + a)^2 - 1)) + 4*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*arctan(1/2*((sqrt(2)*b^
3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*si
n(b*x + a))*sqrt(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) + 2*
(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*
d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1
)*sqrt(d*sin(b*x + a)/cos(b*x + a)) - (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*
cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x
 + a)/cos(b*x + a)) + 4*(b^2*d^3*cos(b*x + a)^3 - b^2*d^3*cos(b*x + a))*sqr
t(1/(b^4*d^6)) - 2*sin(b*x + a))/((2*cos(b*x + a)^2 - 1)*sin(b*x + a))) + 4
*sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*arctan(1/2*((sqrt(2)*b^3*d^4*(1/(b^4*d^6
))^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(
4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^4*
(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(
1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x
+ a)/cos(b*x + a)) - (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a) + sq
rt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a
)) - 4*(b^2*d^3*cos(b*x + a)^3 - b^2*d^3*cos(b*x + a))*sqrt(1/(b^4*d^6)) +
2*sin(b*x + a))/((2*cos(b*x + a)^2 - 1)*sin(b*x + a))) - sqrt(2)*b*d^2*(1/(
b^4*d^6))^(1/4)*log(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) +
 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)
```

```
*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))
+ 1) + sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*log(4*b^2*d^3*sqrt(1/(b^4*d^6))*co
s(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x +
a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*si
n(b*x + a)/cos(b*x + a)) + 1) - sqrt(2)*b*d^2*(1/(b^4*d^6))^(1/4)*log(1/4*b
^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) + 1/8*(sqrt(2)*b^3*d^4*(
1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1
/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1/16) + sqrt(2)*b*d
^2*(1/(b^4*d^6))^(1/4)*log(1/4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b
*x + a) - 1/8*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a
) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos
(b*x + a)) + 1/16) + 32*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)*sin(
b*x + a))/(b*d^2)
```

giac [A] time = 1.02, size = 228, normalized size = 1.00

$$\frac{\frac{8\sqrt{d\tan(bx+a)}\,d\tan(bx+a)}{\left(d^2\tan(bx+a)^2+d^2\right)b} + \frac{2\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{bd^2} + \frac{2\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{bd^2} - \frac{\sqrt{2}\,|d|^{\frac{3}{2}}\log\left(d\,t\right.}{}}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 1/16*(8*sqrt(d*tan(b*x + a))*d*tan(b*x + a)/((d^2*tan(b*x + a)^2 + d^2)*b)
+ 2*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sqrt(
d*tan(b*x + a)))/sqrt(abs(d)))/(b*d^2) + 2*sqrt(2)*abs(d)^(3/2)*arctan(-1/2
*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d
^2) - sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x + a)
)*sqrt(abs(d)) + abs(d))/(b*d^2) + sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a)
- sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d^2))/d
```

maple [C] time = 0.46, size = 522, normalized size = 2.30

$$\frac{\left(-1+\cos(bx+a)\right)\left(-i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}, \frac{1}{2}-\frac{i}{2}, \frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/8/b*(-1+cos(b*x+a))*(-I*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a
)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
```

```
)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(
1/2))+I*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(
b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi(((1-c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))+EllipticPi((
(1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos
(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((
1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+EllipticPi(((1-cos(b*x+a)+sin(b*
x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))
^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x
+a))/sin(b*x+a))^(1/2)+2*cos(b*x+a)^2*2^(1/2)-2*cos(b*x+a)*2^(1/2))*(cos(b*
x+a)+1)^2/cos(b*x+a)^2/sin(b*x+a)/(d*sin(b*x+a)/cos(b*x+a))^(3/2)*2^(1/2)
```

maxima [A] time = 0.84, size = 193, normalized size = 0.85

$$\frac{d^2\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(d\tan(bx+a)+\sqrt{2}\sqrt{d\tan(bx+a)}\sqrt{d}+d\right)}{\sqrt{d}}+\frac{\sqrt{2}\cdots}{}\right.}{16\,bd^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/16*(d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(b*x
 + a)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
 2*sqrt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(b*x + a) + sq
rt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(b*x + a
) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d)) + 8*(d*tan(b*x + a))
^(3/2)*d^2/(d^2*tan(b*x + a)^2 + d^2))/(b*d^3)
```

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

$$\int \frac{\sin(a+b\,x)^2}{(d\tan(a+b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(sin(a + b*x)^2/(d*tan(a + b*x))^(3/2), x)
```

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

$$\int \frac{\sin^2(a+bx)}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(sin(a + b*x)**2/(d*tan(a + b*x))**(3/2), x)
```

3.96 $\int \frac{\csc^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=20

$$-\frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

```
[Out] -2/5*d/b/(d*tan(b*x+a))^(5/2)
```

Rubi [A] time = 0.04, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 30}

$$-\frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d)/(5*b*(d*Tan[a + b*x])^(5/2))
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\begin{aligned}\int \frac{\csc^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= \frac{d\,\text{Subst}\left(\int \frac{1}{x^{7/2}}\,dx, x, d\tan(a+bx)\right)}{b}\\ &= -\frac{2d}{5b(d\tan(a+bx))^{5/2}}\end{aligned}$$

Mathematica [A] time = 0.12, size = 20, normalized size = 1.00

$$-\frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d)/(5*b*(d*Tan[a + b*x])^(5/2))
```

fricas [B] time = 0.50, size = 58, normalized size = 2.90

$$\frac{2\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos(bx+a)^3}{5\left(bd^2\cos(bx+a)^2-bd^2\right)\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)^3/((b*d^2*cos(b*x + a)^2
 - b*d^2)*sin(b*x + a))
```

giac [A] time = 1.23, size = 26, normalized size = 1.30

$$-\frac{2}{5\sqrt{d\tan(bx+a)}\,bd\tan(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] -2/5/(sqrt(d*tan(b*x + a))*b*d*tan(b*x + a)^2)
```

maple [B] time = 0.50, size = 38, normalized size = 1.90

$$-\frac{2\cos(bx+a)}{5b\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -2/5/b*cos(b*x+a)/(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)
```

maxima [A] time = 0.35, size = 23, normalized size = 1.15

$$-\frac{2}{5\,\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}\,b\tan\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -2/5/((d*tan(b*x + a))^(3/2)*b*tan(b*x + a))
```

mupad [B] time = 6.45, size = 381, normalized size = 19.05

$$-\frac{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\sqrt{-\frac{d\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}\,14\mathrm{i}}{5\,b\,d^2\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}-\frac{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\sqrt{-\frac{d\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}\,8\mathrm{i}}{15\,b\,d^2\,{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}^2}-\frac{16\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\sqrt{-\frac{d\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}\right.}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+}}}{5\,b\,d^2\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^2*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] (8*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i +
b*x*2i) + 1))^(1/2))/(5*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)^3) - ((exp(a*2i
+ b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))
^(1/2)*8i)/(15*b*d^2*(exp(a*2i + b*x*2i) - 1)^2) - (16*(exp(a*2i + b*x*2i)
+ 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(5
*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(
a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*32i)/(15*b*d^2*(ex
p(a*2i + b*x*2i)*1i - 1i)^2) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b
*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*14i)/(5*b*d^2*(exp(a*2i +
b*x*2i) - 1))
```

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

$$\int\frac{\csc^2\left(a+bx\right)}{\left(d\tan\left(a+bx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(csc(a + b*x)**2/(d*tan(a + b*x))**(3/2), x)
```

3.97 $\int \frac{\csc^4(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=43

$$-\frac{2d^3}{9b(d\tan(a+bx))^{9/2}}-\frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

```
[Out] -2/9*d^3/b/(d*tan(b*x+a))^(9/2)-2/5*d/b/(d*tan(b*x+a))^(5/2)
```

Rubi **[A]** time = 0.05, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 14}

$$-\frac{2d^3}{9b(d\tan(a+bx))^{9/2}}-\frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^4/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d^3)/(9*b*(d*Tan[a + b*x])^(9/2)) - (2*d)/(5*b*(d*Tan[a + b*x])^(5/2))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\csc^4(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = \frac{d\,\mathrm{Subst}\left(\int \frac{d^2+x^2}{x^{11/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\mathrm{Subst}\left(\int \left(\frac{d^2}{x^{11/2}}+\frac{1}{x^{7/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^3}{9b(d\tan(a+bx))^{9/2}} - \frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

Mathematica [A] time = 0.09, size = 42, normalized size = 0.98

$$\frac{2\left(-5\csc^4(a+bx)+\csc^2(a+bx)+4\right)}{45bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^4/(d*Tan[a + b*x])^(3/2),x]
[Out] (2*(4 + Csc[a + b*x]^2 - 5*Csc[a + b*x]^4))/(45*b*d*Sqrt[d*Tan[a + b*x]])
```

fricas [B] time = 0.49, size = 84, normalized size = 1.95

$$\frac{2\left(4\cos(bx+a)^5-9\cos(bx+a)^3\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{45\left(bd^2\cos(bx+a)^4-2\,bd^2\cos(bx+a)^2+bd^2\right)\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
[Out] 2/45*(4*cos(b*x + a)^5 - 9*cos(b*x + a)^3)*sqrt(d*sin(b*x + a)/cos(b*x + a)
)/((b*d^2*cos(b*x + a)^4 - 2*b*d^2*cos(b*x + a)^2 + b*d^2)*sin(b*x + a))
```

giac [A] time = 1.93, size = 45, normalized size = 1.05

$$-\frac{2\left(9\,d^4\tan(bx+a)^2+5\,d^4\right)}{45\sqrt{d\tan(bx+a)}\,bd^5\tan(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] -2/45*(9*d^4*tan(b*x + a)^2 + 5*d^4)/(sqrt(d*tan(b*x + a))*b*d^5*tan(b*x +
a)^4)
```

maple [A] time = 0.58, size = 50, normalized size = 1.16

$$\frac{2\left(4\left(\cos^2(bx+a)\right)-9\right)\cos(bx+a)}{45b\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}\sin(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^4/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 2/45/b*(4*cos(b*x+a)^2-9)*cos(b*x+a)/(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*
x+a)^3
```

maxima [A] time = 0.45, size = 35, normalized size = 0.81

$$-\frac{2\left(9\,d^2\tan(bx+a)^2+5\,d^2\right)d}{45\,\left(d\tan(bx+a)\right)^{\frac{9}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -2/45*(9*d^2*tan(b*x + a)^2 + 5*d^2)*d/((d*tan(b*x + a))^(9/2)*b)
```

mupad [B] time = 8.15, size = 684, normalized size = 15.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^4*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*
x*2i) + 1))^(1/2)*6088i)/(945*b*d^2*(exp(a*2i + b*x*2i) - 1)) + ((exp(a*2i
+ b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))
^(1/2)*4024i)/(945*b*d^2*(exp(a*2i + b*x*2i) - 1)^2) + ((exp(a*2i + b*x*2i)
 + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*20
0i)/(63*b*d^2*(exp(a*2i + b*x*2i) - 1)^3) + ((exp(a*2i + b*x*2i) + 1)*(-(d*
(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*64i)/(63*b*d^
2*(exp(a*2i + b*x*2i) - 1)^4) + (1184*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*
2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(189*b*d^2*(exp(a*2
i + b*x*2i)*1i - 1i)) + ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*
1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*4192i)/(945*b*d^2*(exp(a*2i + b*x
```

```
*2i)*1i - 1i)^2) - (2176*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*
1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(315*b*d^2*(exp(a*2i + b*x*2i)*1
i - 1i)^3) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2)*512i)/(63*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)
^4) + (32*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(
a*2i + b*x*2i) + 1))^(1/2))/(9*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)^5)
```

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

$$\int \frac{\csc^4(a+bx)}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**4/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(csc(a + b*x)**4/(d*tan(a + b*x))**(3/2), x)
```

3.98 $\int \frac{\csc^6(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=65

$$-\frac{2d^5}{13b(d\tan(a+bx))^{13/2}}-\frac{4d^3}{9b(d\tan(a+bx))^{9/2}}-\frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

```
[Out] -2/13*d^5/b/(d*tan(b*x+a))^(13/2)-4/9*d^3/b/(d*tan(b*x+a))^(9/2)-2/5*d/b/(d
*tan(b*x+a))^(5/2)
```

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 270}

$$-\frac{2d^5}{13b(d\tan(a+bx))^{13/2}}-\frac{4d^3}{9b(d\tan(a+bx))^{9/2}}-\frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^6/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d^5)/(13*b*(d*Tan[a + b*x])^(13/2)) - (4*d^3)/(9*b*(d*Tan[a + b*x])^(9/
2)) - (2*d)/(5*b*(d*Tan[a + b*x])^(5/2))
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\csc^6(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = \frac{d\,\mathrm{Subst}\left(\int \frac{\left(d^2+x^2\right)^2}{x^{15/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\mathrm{Subst}\left(\int \left(\frac{d^4}{x^{15/2}}+\frac{2d^2}{x^{11/2}}+\frac{1}{x^{7/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^5}{13b(d\tan(a+bx))^{13/2}} - \frac{4d^3}{9b(d\tan(a+bx))^{9/2}} - \frac{2d}{5b(d\tan(a+bx))^{5/2}}$$

Mathematica [**A**] time = 0.13, size = 54, normalized size = 0.83

$$\frac{-90\csc^6(a+bx)+10\csc^4(a+bx)+16\csc^2(a+bx)+64}{585bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^6/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (64 + 16*Csc[a + b*x]^2 + 10*Csc[a + b*x]^4 - 90*Csc[a + b*x]^6)/(585*b*d*S
qrt[d*Tan[a + b*x]])
```

fricas [**B**] time = 0.51, size = 109, normalized size = 1.68

$$\frac{2\left(32\cos(bx+a)^7-104\cos(bx+a)^5+117\cos(bx+a)^3\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{585\left(bd^2\cos(bx+a)^6-3\,bd^2\cos(bx+a)^4+3\,bd^2\cos(bx+a)^2-bd^2\right)\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 2/585*(32*cos(b*x + a)^7 - 104*cos(b*x + a)^5 + 117*cos(b*x + a)^3)*sqrt(d*
sin(b*x + a)/cos(b*x + a))/((b*d^2*cos(b*x + a)^6 - 3*b*d^2*cos(b*x + a)^4
+ 3*b*d^2*cos(b*x + a)^2 - b*d^2)*sin(b*x + a))
```

giac [**A**] time = 2.56, size = 58, normalized size = 0.89

$$-\frac{2\left(117\,d^6\tan(bx+a)^4+130\,d^6\tan(bx+a)^2+45\,d^6\right)}{585\sqrt{d\tan(bx+a)}\,bd^7\tan(bx+a)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] -2/585*(117*d^6*tan(b*x + a)^4 + 130*d^6*tan(b*x + a)^2 + 45*d^6)/(sqrt(d*t
an(b*x + a))*b*d^7*tan(b*x + a)^6)
```

maple [A] time = 0.66, size = 60, normalized size = 0.92

$$-\frac{2\left(32\left(\cos^{4}\left(bx+a\right)\right)-104\left(\cos^{2}\left(bx+a\right)\right)+117\right)\cos\left(bx+a\right)}{585b\sin\left(bx+a\right)^{5}\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^6/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -2/585/b*(32*cos(b*x+a)^4-104*cos(b*x+a)^2+117)*cos(b*x+a)/sin(b*x+a)^5/(d*
sin(b*x+a)/cos(b*x+a))^(3/2)
```

maxima [A] time = 0.45, size = 48, normalized size = 0.74

$$-\frac{2\left(117\,d^{4}\tan\left(bx+a\right)^{4}+130\,d^{4}\tan\left(bx+a\right)^{2}+45\,d^{4}\right)d}{585\,\left(d\tan\left(bx+a\right)\right)^{\frac{13}{2}}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -2/585*(117*d^4*tan(b*x + a)^4 + 130*d^4*tan(b*x + a)^2 + 45*d^4)*d/((d*tan
(b*x + a))^(13/2)*b)
```

mupad [B] time = 16.41, size = 987, normalized size = 15.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^6*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] (128*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i
+ b*x*2i) + 1))^(1/2))/(11*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)^3) - ((exp(a*
2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) +
1))^(1/2)*294464i)/(45045*b*d^2*(exp(a*2i + b*x*2i) - 1)^2) - ((exp(a*2i +
b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(
1/2)*24608i)/(2145*b*d^2*(exp(a*2i + b*x*2i) - 1)^3) - ((exp(a*2i + b*x*2i)
 + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*13
5104i)/(9009*b*d^2*(exp(a*2i + b*x*2i) - 1)^4) - ((exp(a*2i + b*x*2i) + 1)*
```

```
(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*13088i)/
(1287*b*d^2*(exp(a*2i + b*x*2i) - 1)^5) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(e
xp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*384i)/(143*b*d^
2*(exp(a*2i + b*x*2i) - 1)^6) - (55808*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a
*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(6435*b*d^2*(exp(a
*2i + b*x*2i)*1i - 1i)) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i
)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*7424i)/(1155*b*d^2*(exp(a*2i +
b*x*2i)*1i - 1i)^2) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i
 - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*18368i)/(2145*b*d^2*(exp(a*2i + b*x
*2i) - 1)) + ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2)*228736i)/(9009*b*d^2*(exp(a*2i + b*x*2i)*1i
- 1i)^4) - (17152*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i
))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(429*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)
^5) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2
i + b*x*2i) + 1))^(1/2)*4608i)/(143*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)^6) +
 (128*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i
 + b*x*2i) + 1))^(1/2))/(13*b*d^2*(exp(a*2i + b*x*2i)*1i - 1i)^7)
```

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

$$\int \frac{\csc^6(a+bx)}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**6/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(csc(a + b*x)**6/(d*tan(a + b*x))**(3/2), x)
```

3.99 $\int \frac{\sin^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=112

$$\frac{\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{12bd^2}+\frac{\sin^3(a+bx)}{3bd\sqrt{d\tan(a+bx)}}-\frac{\sin(a+bx)}{6bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -1/6*sin(b*x+a)/b/d/(d*tan(b*x+a))^(1/2)+1/3*sin(b*x+a)^3/b/d/(d*tan(b*x+a)
)^(1/2)-1/12*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*Ellip
ticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b
/d^2
```

Rubi [A] time = 0.13, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2596, 2598, 2601, 2573, 2641}

$$\frac{\sqrt{\sin(2a+2bx)}\,\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{12bd^2}+\frac{\sin^3(a+bx)}{3bd\sqrt{d\tan(a+bx)}}-\frac{\sin(a+bx)}{6bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -Sin[a + b*x]/(6*b*d*Sqrt[d*Tan[a + b*x]]) + Sin[a + b*x]^3/(3*b*d*Sqrt[d*T
an[a + b*x]]) + (Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2
*b*x]]*Sqrt[d*Tan[a + b*x]])/(12*b*d^2)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= \frac{\sin^3(a+bx)}{3bd\sqrt{d\tan(a+bx)}}+\frac{\int \sin(a+bx)\sqrt{d\tan(a+bx)}\,dx}{6d^2}\\ &= -\frac{\sin(a+bx)}{6bd\sqrt{d\tan(a+bx)}}+\frac{\sin^3(a+bx)}{3bd\sqrt{d\tan(a+bx)}}+\frac{\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx}{12d^2}\\ &= -\frac{\sin(a+bx)}{6bd\sqrt{d\tan(a+bx)}}+\frac{\sin^3(a+bx)}{3bd\sqrt{d\tan(a+bx)}}+\frac{\left(\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{}{\sqrt{\cos(a}}}{12d^2\sqrt{\sin(a+bx)}}\\ &= -\frac{\sin(a+bx)}{6bd\sqrt{d\tan(a+bx)}}+\frac{\sin^3(a+bx)}{3bd\sqrt{d\tan(a+bx)}}+\frac{\left(\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+}\right.}{12d^2}\\ &= -\frac{\sin(a+bx)}{6bd\sqrt{d\tan(a+bx)}}+\frac{\sin^3(a+bx)}{3bd\sqrt{d\tan(a+bx)}}+\frac{\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+}}{12bd^2}\end{aligned}$$

Mathematica [C] time = 0.38, size = 102, normalized size = 0.91

$$-\frac{\csc(a+bx)\sqrt{d\tan(a+bx)}\left(\sin(4(a+bx))\sqrt{\sec^2(a+bx)}+4\sqrt[4]{-1}\sqrt{\tan(a+bx)}F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(a+bx)}\right.\right.\right.}{24bd^2\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -1/24*(Csc[a + b*x]*(Sqrt[Sec[a + b*x]^2]*Sin[4*(a + b*x)] + 4*(-1)^(1/4)*E
llipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1]*Sqrt[Tan[a + b*x]])*
Sqrt[d*Tan[a + b*x]])/(b*d^2*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(\cos\left(bx+a\right)^{2}-1\right)\sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)}{d^{2}\tan\left(bx+a\right)^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(cos(b*x + a)^2 - 1)*sqrt(d*tan(b*x + a))*sin(b*x + a)/(d^2*tan(b
*x + a)^2), x)
```

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

$$\int \frac{\sin\left(bx+a\right)^{3}}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)
```

maple [A] time = 0.49, size = 222, normalized size = 1.98

$$-\frac{\left(-1+\cos\left(bx+a\right)\right)\left(2\left(\cos^{4}\left(bx+a\right)\right)\sqrt{2}+\sin\left(bx+a\right)\text{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\right.}{12b\cos\left(b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/12/b*(-1+cos(b*x+a))*(2*cos(b*x+a)^4*2^(1/2)+sin(b*x+a)*EllipticF(((1-co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*
x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+si
n(b*x+a))/sin(b*x+a))^(1/2)-2*cos(b*x+a)^3*2^(1/2)-cos(b*x+a)^2*2^(1/2)+cos
(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)^2/sin(b*x+a)^2/(d*sin(b*x+a)/c
os(b*x+a))^(3/2)*2^(1/2)
```

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

$$\int \frac{\sin\left(bx+a\right)^{3}}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
[Out] integrate(sin(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^3}{{\left(d\,\mathrm{tan}\left(a+b\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(d*tan(a + b*x))^(3/2),x)
[Out] int(sin(a + b*x)^3/(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*tan(b*x+a))**(3/2),x)
[Out] Timed out
```

3.100 $\int \frac{\sin(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=79

$$\frac{\sin(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2bd\sqrt{d\tan(a+bx)}}$$

```
[Out] sin(b*x+a)/b/d/(d*tan(b*x+a))^(1/2)-1/2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1
/4*Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(
1/2)/b/d/(d*tan(b*x+a))^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2602, 2569, 2573, 2641}

$$\frac{\sin(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] Sin[a + b*x]/(b*d*Sqrt[d*Tan[a + b*x]]) + (EllipticF[a - Pi/4 + b*x, 2]*Sec
[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(2*b*d*Sqrt[d*Tan[a + b*x]])
```

Rule 2569

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(a*(b*Sin[e + f*x])^(n + 1)*(a*Cos[e + f*x])^(m - 1))
/(b*f*(m + n)), x] + Dist[(a^2*(m - 1))/(m + n), Int[(b*Sin[e + f*x])^n*(a*
Cos[e + f*x])^(m - 2), x], x] /; FreeQ[{a, b, e, f, n}, x] && GtQ[m, 1] &&
NeQ[m + n, 0] && IntegersQ[2*m, 2*n]
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
```

```
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= \frac{\sqrt{\sin(a+bx)}\int \frac{\cos^{\frac{3}{2}}(a+bx)}{\sqrt{\sin(a+bx)}}\,dx}{d\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= \frac{\sin(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{\sqrt{\sin(a+bx)}\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}\,dx}{2d\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= \frac{\sin(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{\left(\sec(a+bx)\sqrt{\sin(2a+2bx)}\right)\int \frac{1}{\sqrt{\sin(2a+2bx)}}\,dx}{2d\sqrt{d\tan(a+bx)}}\\
&= \frac{\sin(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{2bd\sqrt{d\tan(a+bx)}}
\end{aligned}
$$

Mathematica [C] time = 0.77, size = 126, normalized size = 1.59

$$
\frac{\cos(2(a+bx))\tan^{\frac{3}{2}}(a+bx)\sec(a+bx)\left(-\sqrt{\tan(a+bx)}\sqrt{\sec^2(a+bx)}+\sqrt[4]{-1}\sec^2(a+bx)F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(a+bx)}\right)\middle|-1\right)\right)}{b\left(\tan^2(a+bx)-1\right)\sqrt{\sec^2(a+bx)}(d\tan(a+bx))^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (Cos[2*(a + b*x)]*Sec[a + b*x]*((-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*S
qrt[Tan[a + b*x]]], -1]*Sec[a + b*x]^2 - Sqrt[Sec[a + b*x]^2]*Sqrt[Tan[a +
b*x]])*Tan[a + b*x]^(3/2))/(b*Sqrt[Sec[a + b*x]^2]*(d*Tan[a + b*x])^(3/2)*(
-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(\frac{\sqrt{d\tan(bx+a)}\,\sin(bx+a)}{d^2\tan(bx+a)^2},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*sin(b*x + a)/(d^2*tan(b*x + a)^2), x)
```

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

$$\int \frac{\sin(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.42, size = 196, normalized size = 2.48

$$-\frac{(\cos(bx+a)+1)^2(-1+\cos(bx+a))\left(\sin(bx+a)\,\mathrm{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1\cdots}{}}\cdots\right.}{2b\cos(bx+a)^2\sin(bx+a)^2\left(\frac{d\sin\cdots}{\cos\cdots}\right.\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/2/b*(cos(b*x+a)+1)^2*(-1+cos(b*x+a))*(sin(b*x+a)*EllipticF(((1-cos(b*x+a
)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(
1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)-cos(b*x+a)^2*2^(1/2)+cos(b*x+a)*2^(1/2))/cos(b*x+a)^2/
sin(b*x+a)^2/(d*sin(b*x+a)/cos(b*x+a))^(3/2)*2^(1/2)
```

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

$$\int \frac{\sin(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{\sin(a+b\,x)}{(d\tan(a+b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(sin(a + b*x)/(d*tan(a + b*x))^(3/2), x)
```

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

$$\int \frac{\sin(a+bx)}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(sin(a + b*x)/(d*tan(a + b*x))**(3/2), x)
```

3.101 $\int \frac{\csc(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=82

$$-\frac{\sqrt{\sin(2a+2bx)}\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3bd^2}-\frac{2\csc(a+bx)}{3bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2/3*csc(b*x+a)/b/d/(d*tan(b*x+a))^(1/2)+1/3*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^
2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2
*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b/d^2
```

Rubi [A] time = 0.10, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2597, 2601, 2573, 2641}

$$-\frac{\sqrt{\sin(2a+2bx)}\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{3bd^2}-\frac{2\csc(a+bx)}{3bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Csc[a + b*x])/(3*b*d*Sqrt[d*Tan[a + b*x]]) - (Csc[a + b*x]*EllipticF[a
- Pi/4 + b*x, 2]*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(3*b*d^2)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
```

```
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\csc(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= -\frac{2\csc(a+bx)}{3bd\sqrt{d\tan(a+bx)}}-\frac{\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx}{3d^2}\\
&= -\frac{2\csc(a+bx)}{3bd\sqrt{d\tan(a+bx)}}-\frac{\left(\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}\,dx}{3d^2\sqrt{\sin(a+bx)}}\\
&= -\frac{2\csc(a+bx)}{3bd\sqrt{d\tan(a+bx)}}-\frac{\left(\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{1}{\sqrt{\sin(2a+2bx)}}\,dx}{3d^2}\\
&= -\frac{2\csc(a+bx)}{3bd\sqrt{d\tan(a+bx)}}-\frac{\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}{3bd^2}
\end{aligned}
$$

Mathematica [C] time = 0.73, size = 110, normalized size = 1.34

$$
\frac{2\cos(2(a+bx))\sec(a+bx)\sqrt{\sec^2(a+bx)}\left(\sqrt{\sec^2(a+bx)}-\sqrt[4]{-1}\tan^{\frac{3}{2}}(a+bx)F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(a+bx)}\right)\middle|\right.\right.}{3b\left(\tan^2(a+bx)-1\right)(d\tan(a+bx))^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*Cos[2*(a + b*x)]*Sec[a + b*x]*Sqrt[Sec[a + b*x]^2]*(Sqrt[Sec[a + b*x]^2]
 - (-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1]*Tan[a
 + b*x]^(3/2)))/(3*b*(d*Tan[a + b*x])^(3/2)*(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$
\text{integral}\left(\frac{\sqrt{d\tan(bx+a)}\csc(bx+a)}{d^2\tan(bx+a)^2},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)/(d^2*tan(b*x + a)^2), x)
```

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

$$\int \frac{\csc(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.49, size = 302, normalized size = 3.68

$$-\frac{(-1+\cos(bx+a))^{2}\left(\operatorname{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/3/b*(-1+cos(b*x+a))^2*(EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b
*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2)*sin(b*x+a)+sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a)
)^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin
(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+cos
(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)^2/(d*sin(b*x+a)/cos(b*x+a))^(3
/2)/sin(b*x+a)^4*2^(1/2)
```

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

$$\int \frac{\csc(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(csc(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{1}{\sin\left(a+b\,x\right)\,\left(d\tan\left(a+b\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] int(1/(sin(a + b*x)*(d*tan(a + b*x))^(3/2)), x)
```

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

$$\int \frac{\csc\left(a+bx\right)}{\left(d\tan\left(a+bx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(csc(a + b*x)/(d*tan(a + b*x))**(3/2), x)
```

3.102 $\int \frac{\csc^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=112

$$-\frac{2\sqrt{\sin(2a+2bx)}\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{21bd^2}-\frac{2\csc^3(a+bx)}{7bd\sqrt{d\tan(a+bx)}}+\frac{2\csc(a+bx)}{21bd\sqrt{d\tan(a+bx)}}$$

```
[Out] 2/21*csc(b*x+a)/b/d/(d*tan(b*x+a))^(1/2)-2/7*csc(b*x+a)^3/b/d/(d*tan(b*x+a)
)^(1/2)+2/21*csc(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*Ellip
ticF(cos(a+1/4*Pi+b*x),2^(1/2))*sin(2*b*x+2*a)^(1/2)*(d*tan(b*x+a))^(1/2)/b
/d^2
```

Rubi [A] time = 0.15, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2597, 2599, 2601, 2573, 2641}

$$-\frac{2\sqrt{\sin(2a+2bx)}\csc(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{21bd^2}-\frac{2\csc^3(a+bx)}{7bd\sqrt{d\tan(a+bx)}}+\frac{2\csc(a+bx)}{21bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*Csc[a + b*x])/(21*b*d*Sqrt[d*Tan[a + b*x]]) - (2*Csc[a + b*x]^3)/(7*b*d*
Sqrt[d*Tan[a + b*x]]) - (2*Csc[a + b*x]*EllipticF[a - Pi/4 + b*x, 2]*Sqrt[S
in[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])/(21*b*d^2)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\csc^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = -\frac{2\csc^3(a+bx)}{7bd\sqrt{d\tan(a+bx)}} - \frac{\int \csc^3(a+bx)\sqrt{d\tan(a+bx)}\,dx}{7d^2}$$

$$= \frac{2\csc(a+bx)}{21bd\sqrt{d\tan(a+bx)}} - \frac{2\csc^3(a+bx)}{7bd\sqrt{d\tan(a+bx)}} - \frac{2\int \csc(a+bx)\sqrt{d\tan(a+bx)}\,dx}{21d^2}$$

$$= \frac{2\csc(a+bx)}{21bd\sqrt{d\tan(a+bx)}} - \frac{2\csc^3(a+bx)}{7bd\sqrt{d\tan(a+bx)}} - \frac{\left(2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \frac{\cdots}{\sqrt{\cos(\cdots}}}{21d^2\sqrt{\sin(a+bx)}}$$

$$= \frac{2\csc(a+bx)}{21bd\sqrt{d\tan(a+bx)}} - \frac{2\csc^3(a+bx)}{7bd\sqrt{d\tan(a+bx)}} - \frac{\left(2\csc(a+bx)\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a\cdots}\right.}{21d^2}$$

$$= \frac{2\csc(a+bx)}{21bd\sqrt{d\tan(a+bx)}} - \frac{2\csc^3(a+bx)}{7bd\sqrt{d\tan(a+bx)}} - \frac{2\csc(a+bx)F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{\sin(2a\cdots}}{21bd^2}$$

Mathematica [C] time = 1.71, size = 136, normalized size = 1.21

$$\frac{\csc^3(a+bx)\left((10\cos(2(a+bx))+\cos(4(a+bx))+1)\sec^2(a+bx)^{3/2} - 8\sqrt[4]{-1}\cos(2(a+bx))\tan^{\frac{7}{2}}(a+bx)F\left(i\sin\cdots\right.\right.}{42bd\left(\tan^2(a+bx)-1\right)\sqrt{\sec^2(a+bx)}\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (Csc[a + b*x]^3*((1 + 10*Cos[2*(a + b*x)] + Cos[4*(a + b*x)])*(Sec[a + b*x]
^2)^(3/2) - 8*(-1)^(1/4)*Cos[2*(a + b*x)]*EllipticF[I*ArcSinh[(-1)^(1/4)*Sq
rt[Tan[a + b*x]]], -1]*Tan[a + b*x]^(7/2)))/(42*b*d*Sqrt[Sec[a + b*x]^2]*Sq
rt[d*Tan[a + b*x]]*(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(bx+a\right)}\,\csc\left(bx+a\right)^{3}}{d^{2}\tan\left(bx+a\right)^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)^3/(d^2*tan(b*x + a)^2), x)
```

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

$$\int \frac{\csc\left(bx+a\right)^{3}}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.59, size = 558, normalized size = 4.98

$$\frac{\left(-1+\cos\left(bx+a\right)\right)^{2}\left(2\left(\cos^{3}\left(bx+a\right)\right)\text{EllipticF}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^3/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/21/b*(-1+cos(b*x+a))^2*(2*cos(b*x+a)^3*EllipticF(((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*sin(b*x+a)+2*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
```

```
2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+
a)^2*sin(b*x+a)-2*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/
2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+si
n(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*si
n(b*x+a)-2*sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-cos(b*x+a
)^3*2^(1/2)-2*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)^2/sin(b*x+a)^
6/(d*sin(b*x+a)/cos(b*x+a))^(3/2)*2^(1/2)
```

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

$$\int \frac{\csc (bx+a)^3}{(d\tan (bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(csc(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{1}{\sin (a+b\,x)^3\,(d\tan (a+b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^3*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] int(1/(sin(a + b*x)^3*(d*tan(a + b*x))^(3/2)), x)
```

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

$$\int \frac{\csc^3 (a+bx)}{(d\tan (a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(csc(a + b*x)**3/(d*tan(a + b*x))**(3/2), x)
```

3.103 $\int \frac{\sin^4(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=257

$$-\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{5/2}}+\frac{3\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,bd^{5/2}}-\frac{3\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{64\sqrt{2}\,bd^{5/2}}$$

```
[Out] -3/64*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(5/2)*2^(1/2)+3/64
*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(5/2)*2^(1/2)-3/128*ln(
d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(5/2)*2^(1/2)+
3/128*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(5/2)
*2^(1/2)+1/16*cos(b*x+a)^2*(d*tan(b*x+a))^(1/2)/b/d^3-1/4*cos(b*x+a)^4*(d*t
an(b*x+a))^(1/2)/b/d^3
```

Rubi [A] time = 0.18, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {2591, 288, 290, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{5/2}}+\frac{3\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}\,bd^{5/2}}-\frac{3\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{64\sqrt{2}\,bd^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^4/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-3*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]*b*d^(5/
2)) + (3*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(32*Sqrt[2]*b*
d^(5/2)) - (3*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b
*x]]])/(64*Sqrt[2]*b*d^(5/2)) + (3*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqr
t[2]*Sqrt[d*Tan[a + b*x]]])/(64*Sqrt[2]*b*d^(5/2)) + (Cos[a + b*x]^2*Sqrt[d
*Tan[a + b*x]])/(16*b*d^3) - (Cos[a + b*x]^4*Sqrt[d*Tan[a + b*x]])/(4*b*d^3
)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
```

```
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sin^4(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{x^{3/2}}{\left(d^2+x^2\right)^3}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= -\frac{\cos^4(a+bx)\sqrt{d\tan(a+bx)}}{4bd^3} + \frac{d\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{8b}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd^3} - \frac{\cos^4(a+bx)\sqrt{d\tan(a+bx)}}{4bd^3} + \frac{3\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx\right.}{32bd}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd^3} - \frac{\cos^4(a+bx)\sqrt{d\tan(a+bx)}}{4bd^3} + \frac{3\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x,\right.}{16bd}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd^3} - \frac{\cos^4(a+bx)\sqrt{d\tan(a+bx)}}{4bd^3} + \frac{3\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x,\right.}{32bd^2}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{16bd^3} - \frac{\cos^4(a+bx)\sqrt{d\tan(a+bx)}}{4bd^3} - \frac{3\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\right.}{64\sqrt{2}}$$

$$= -\frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{64\sqrt{2}\,bd^{5/2}} + \frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)+\right.}{64\sqrt{2}\,bd^{5/}}$$

$$= -\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{5/2}} + \frac{3\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{32\sqrt{2}\,bd^{5/2}} - \frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a\right.}{64}$$

Mathematica [A] time = 0.77, size = 123, normalized size = 0.48

$$-\frac{\csc(a+bx)\sqrt{d\tan(a+bx)}\left(\sin(a+bx)+2\sin(3(a+bx))+\sin(5(a+bx))+3\sqrt{\sin(2(a+bx))}\sin^{-1}(\cos(a+b\right.}{64bd^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^4/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] -1/64*(Csc[a + b*x]*(Sin[a + b*x] + 3*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*S
qrt[Sin[2*(a + b*x)]] - 3*Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a +
 b*x)]]]*Sqrt[Sin[2*(a + b*x)]] + 2*Sin[3*(a + b*x)] + Sin[5*(a + b*x)])*Sq
rt[d*Tan[a + b*x]])/(b*d^3)
```

fricas [B] time = 64.66, size = 1558, normalized size = 6.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] -1/256*(6*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/4)*arctan(1/2*(sqrt(4*b^2*d^5*sqr
t(1/(b^4*d^10))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10
))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*s
in(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b^3*d^7*(1/(b
^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x +
 a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 2*sin(b*x + a)) - (sqrt(2)*b^3*d^7
*(1/(b^4*d^10))^(3/4)*sin(b*x + a) - sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos
(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/sin(b*x + a)) + 6*sqrt(2)*b*d
^3*(1/(b^4*d^10))^(1/4)*arctan(1/2*(sqrt(4*b^2*d^5*sqrt(1/(b^4*d^10))*cos(b
*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*x + a)
^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*s
in(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b
*x + a) + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x +
 a)/cos(b*x + a)) - 2*sin(b*x + a)) - (sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)
*sin(b*x + a) - sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(d*sin
(b*x + a)/cos(b*x + a)))/sin(b*x + a)) + 6*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/
4)*arctan(1/2*((sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)
*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(4*b^2*d^5*sqrt(1/(b^4*d^10))
*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*
x + a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sq
rt(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (s
qrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b*d^2*(1/(b^4*d^
10))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^5*cos
(b*x + a)^3 - b^2*d^5*cos(b*x + a))*sqrt(1/(b^4*d^10)) + 2*sin(b*x + a))/((
2*cos(b*x + a)^2 - 1)*sin(b*x + a))) + 6*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/4)
*arctan(1/2*((sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b
*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(4*b^2*d^5*sqrt(1/(b^4*d^10))*c
os(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*x
+ a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt
(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (sqr
t(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b*d^2*(1/(b^4*d^10
))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 4*(b^2*d^5*cos(b
*x + a)^3 - b^2*d^5*cos(b*x + a))*sqrt(1/(b^4*d^10)) - 2*sin(b*x + a))/((2*
cos(b*x + a)^2 - 1)*sin(b*x + a))) - 3*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/4)*l
og(4*b^2*d^5*sqrt(1/(b^4*d^10))*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*
d^7*(1/(b^4*d^10))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4
)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1) + 3*sqr
t(2)*b*d^3*(1/(b^4*d^10))^(1/4)*log(4*b^2*d^5*sqrt(1/(b^4*d^10))*cos(b*x +
a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*x + a)^2 +
sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*
x + a)/cos(b*x + a)) + 1) + 16*(4*cos(b*x + a)^4 - cos(b*x + a)^2)*sqrt(d*s
```

```
in(b*x + a)/cos(b*x + a)))/(b*d^3)
```

giac [A] time = 1.07, size = 248, normalized size = 0.96

$$\frac{3\sqrt{2}\sqrt{|d|}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{64\,bd^3}+\frac{3\sqrt{2}\sqrt{|d|}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{64\,bd^3}+\frac{3\sqrt{2}\sqrt{|d|}\log\left(d\tan\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] 3/64*sqrt(2)*sqrt(abs(d))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sqrt
(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d^3) + 3/64*sqrt(2)*sqrt(abs(d))*arctan(
-1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/
(b*d^3) + 3/128*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*ta
n(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d^3) - 3/128*sqrt(2)*sqrt(abs(d))*log
(d*tan(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d^
3) + 1/16*(sqrt(d*tan(b*x + a))*d^2*tan(b*x + a)^2 - 3*sqrt(d*tan(b*x + a))
*d^2)/((d^2*tan(b*x + a)^2 + d^2)^2*b*d)
```

maple [C] time = 0.49, size = 688, normalized size = 2.68

$$-\frac{(-1+\cos(bx+a))\left(3i\,\mathrm{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^4/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] -1/64/b*(-1+cos(b*x+a))*(3*I*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*
((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/si
n(b*x+a))^(1/2)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2
-1/2*I,1/2*2^(1/2))-3*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
1/2),1/2+1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*(
(-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)+8*2^(1/2)*cos(b*x+a)^5-8*cos(b*x+a)^4*2^(1/2)+3*EllipticPi((
(1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(b*x+
a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+3*EllipticPi(((1-cos(
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1
+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2
)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)-6*sin(b*x+a)*EllipticF(((1-c
```

```
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b
*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2)-2*cos(b*x+a)^3*2^(1/2)+2*cos(b*x+a)^2*2^(1/2))
*(cos(b*x+a)+1)^2/cos(b*x+a)^3/sin(b*x+a)/(d*sin(b*x+a)/cos(b*x+a))^(5/2)*2
^(1/2)
```

maxima [A] time = 0.61, size = 219, normalized size = 0.85

$$\frac{6\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)+6\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)+3\sqrt{2}\,d^{\frac{5}{2}}\log\left(d\tan(bx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^4/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] 1/128*(6*sqrt(2)*d^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan
(b*x + a)))/sqrt(d)) + 6*sqrt(2)*d^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(
d) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + 3*sqrt(2)*d^(5/2)*log(d*tan(b*x + a
) + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 3*sqrt(2)*d^(5/2)*log(d*tan
(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) + 8*((d*tan(b*x + a))
^(5/2)*d^4 - 3*sqrt(d*tan(b*x + a))*d^6)/(d^4*tan(b*x + a)^4 + 2*d^4*tan(b*
x + a)^2 + d^4))/(b*d^5)
```

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

$$\int \frac{\sin(a+b\,x)^4}{(d\tan(a+b\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^4/(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)^4/(d*tan(a + b*x))^(5/2), x)
```

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

$$\int \frac{\sin^4(a+bx)}{(d\tan(a+bx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**4/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Integral(sin(a + b*x)**4/(d*tan(a + b*x))**(5/2), x)
```

3.104 $\int \frac{\sin^2(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=227

$$-\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,bd^{5/2}}+\frac{3\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,bd^{5/2}}-\frac{3\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}\,bd^{5/2}}$$

```
[Out] -3/8*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(5/2)*2^(1/2)+3/8*a
rctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(5/2)*2^(1/2)-3/16*ln(d^(
1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(5/2)*2^(1/2)+3/1
6*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(5/2)*2^(
1/2)+1/2*cos(b*x+a)^2*(d*tan(b*x+a))^(1/2)/b/d^3
```

Rubi [A] time = 0.16, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2591, 290, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,bd^{5/2}}+\frac{3\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,bd^{5/2}}-\frac{3\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}\,bd^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-3*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*b*d^(5/2
)) + (3*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*b*d^
(5/2)) - (3*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b*x
]]])/(8*Sqrt[2]*b*d^(5/2)) + (3*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqrt[2
]*Sqrt[d*Tan[a + b*x]]])/(8*Sqrt[2]*b*d^(5/2)) + (Cos[a + b*x]^2*Sqrt[d*Tan
[a + b*x]])/(2*b*d^3)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)^2}\,dx, x, d\tan(a+bx)\right)}{b}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd^3} + \frac{3\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\tan(a+bx)\right)}{4bd}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd^3} + \frac{3\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{2bd}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd^3} + \frac{3\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{4bd^2} + \frac{3\,\text{Subst}\left(\int \frac{}{d}\right.}{}$$

$$= \frac{\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2bd^3} - \frac{3\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}\,bd^{5/2}} - \frac{3\,\text{Su}}{}$$

$$= -\frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}\,bd^{5/2}} + \frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)+\right.}{8\sqrt{2}\,bd^{5/2}}$$

$$= -\frac{3\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,bd^{5/2}} + \frac{3\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,bd^{5/2}} - \frac{3\log\left(\sqrt{d}+\sqrt{d}\tan(a\right.}{8}$$

Mathematica [A] time = 0.55, size = 113, normalized size = 0.50

$$\frac{\csc(a+bx)\sqrt{d\tan(a+bx)}\left(\sin(a+bx)+\sin(3(a+bx))-3\sqrt{\sin(2(a+bx))}\,\sin^{-1}(\cos(a+bx)-\sin(a+bx))+\right.}{8bd^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (Csc[a + b*x]*(Sin[a + b*x] - 3*ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Sqrt[Si
n[2*(a + b*x)]] + 3*Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*x)]
```

```
]]*Sqrt[Sin[2*(a + b*x)]] + Sin[3*(a + b*x)])*Sqrt[d*Tan[a + b*x]])/(8*b*d^
3)
```

fricas [B] time = 66.16, size = 1545, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] -1/32*(6*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/4)*arctan(1/2*(sqrt(4*b^2*d^5*sqrt
(1/(b^4*d^10))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10)
)^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*si
n(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b^3*d^7*(1/(b^
4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x +
a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 2*sin(b*x + a)) - (sqrt(2)*b^3*d^7*
(1/(b^4*d^10))^(3/4)*sin(b*x + a) - sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(
b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/sin(b*x + a)) + 6*sqrt(2)*b*d^
3*(1/(b^4*d^10))^(1/4)*arctan(1/2*(sqrt(4*b^2*d^5*sqrt(1/(b^4*d^10))*cos(b*
x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*x + a)^
2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*si
n(b*x + a)/cos(b*x + a)) + 1)*((sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*
x + a) + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x +
a)/cos(b*x + a)) - 2*sin(b*x + a)) - (sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*
sin(b*x + a) - sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(d*sin(
b*x + a)/cos(b*x + a)))/sin(b*x + a)) + 6*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/4
)*arctan(1/2*((sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*
b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(4*b^2*d^5*sqrt(1/(b^4*d^10))*
cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*x
 + a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqr
t(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (sq
rt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b*d^2*(1/(b^4*d^1
0))^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^5*cos(
b*x + a)^3 - b^2*d^5*cos(b*x + a))*sqrt(1/(b^4*d^10)) + 2*sin(b*x + a))/((2
*cos(b*x + a)^2 - 1)*sin(b*x + a))) + 6*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/4)*
arctan(1/2*((sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b*
d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a))*sqrt(4*b^2*d^5*sqrt(1/(b^4*d^10))*co
s(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*x +
 a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(
d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + (sqrt
(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*sin(b*x + a) + sqrt(2)*b*d^2*(1/(b^4*d^10)
)^(1/4)*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 4*(b^2*d^5*cos(b*
x + a)^3 - b^2*d^5*cos(b*x + a))*sqrt(1/(b^4*d^10)) - 2*sin(b*x + a))/((2*c
os(b*x + a)^2 - 1)*sin(b*x + a))) - 3*sqrt(2)*b*d^3*(1/(b^4*d^10))^(1/4)*lo
g(4*b^2*d^5*sqrt(1/(b^4*d^10))*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d
```

```
^7*(1/(b^4*d^10))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)
*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1) + 3*sqrt
(2)*b*d^3*(1/(b^4*d^10))^(1/4)*log(4*b^2*d^5*sqrt(1/(b^4*d^10))*cos(b*x + a
)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^7*(1/(b^4*d^10))^(3/4)*cos(b*x + a)^2 + s
qrt(2)*b*d^2*(1/(b^4*d^10))^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x
 + a)/cos(b*x + a)) + 1) - 16*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a
)^2)/(b*d^3)
```

giac [A] time = 2.01, size = 220, normalized size = 0.97

$$\frac{3\sqrt{2}\sqrt{|d|}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{8bd^3}+\frac{3\sqrt{2}\sqrt{|d|}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{8bd^3}+\frac{3\sqrt{2}\sqrt{|d|}\log\left(d\tan\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] 3/8*sqrt(2)*sqrt(abs(d))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sqrt(
d*tan(b*x + a)))/sqrt(abs(d)))/(b*d^3) + 3/8*sqrt(2)*sqrt(abs(d))*arctan(-1
/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b
*d^3) + 3/16*sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b
*x + a))*sqrt(abs(d)) + abs(d))/(b*d^3) - 3/16*sqrt(2)*sqrt(abs(d))*log(d*t
an(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d^3) +
 1/2*sqrt(d*tan(b*x + a))/((d^2*tan(b*x + a)^2 + d^2)*b*d)
```

maple [C] time = 0.43, size = 662, normalized size = 2.92

$$\frac{(-1+\cos(bx+a))\left(-3i\,\text{EllipticPi}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/8/b*(-1+cos(b*x+a))*(-3*I*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*(
(-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2-
1/2*I,1/2*2^(1/2))+3*I*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2),1/2+1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((
-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(
b*x+a))^(1/2)-3*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2
-1/2*I,1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(
```

```
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2)-3*EllipticPi(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+
6*sin(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(
1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*
x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)+2*cos(b*x+a)^3*2^(
1/2)-2*cos(b*x+a)^2*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)^3/sin(b*x+a)/(d*si
n(b*x+a)/cos(b*x+a))^(5/2)*2^(1/2)
```

maxima [A] time = 0.65, size = 189, normalized size = 0.83

$$\frac{6\sqrt{2}\sqrt{d}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)+6\sqrt{2}\sqrt{d}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)+3\sqrt{2}\sqrt{d}\log\left(d\tan(\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] 1/16*(6*sqrt(2)*sqrt(d)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(
b*x + a)))/sqrt(d)) + 6*sqrt(2)*sqrt(d)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + 3*sqrt(2)*sqrt(d)*log(d*tan(b*x + a)
 + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 3*sqrt(2)*sqrt(d)*log(d*tan(
b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) + 8*sqrt(d*tan(b*x + a
))*d^2/(d^2*tan(b*x + a)^2 + d^2))/(b*d^3)
```

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

$$\int \frac{\sin(a+b\,x)^2}{(d\tan(a+b\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)^2/(d*tan(a + b*x))^(5/2), x)
```

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

$$\int \frac{\sin^2(a+bx)}{(d\tan(a+bx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Integral(sin(a + b*x)**2/(d*tan(a + b*x))**(5/2), x)
```

3.105 $\int \frac{\csc^2(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=20

$$-\frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

[Out] -2/7*d/b/(d*tan(b*x+a))^(7/2)

Rubi [A] time = 0.04, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 30}

$$-\frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

Antiderivative was successfully verified.

[In] Int[Csc[a + b*x]^2/(d*Tan[a + b*x])^(5/2),x]

[Out] (-2*d)/(7*b*(d*Tan[a + b*x])^(7/2))

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\begin{aligned}\int \frac{\csc^2(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx &= \frac{d\,\text{Subst}\left(\int \frac{1}{x^{9/2}}\,dx, x, d\tan(a+bx)\right)}{b}\\ &= -\frac{2d}{7b(d\tan(a+bx))^{7/2}}\end{aligned}$$

Mathematica [A] time = 0.17, size = 20, normalized size = 1.00

$$-\frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^2/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*d)/(7*b*(d*Tan[a + b*x])^(7/2))
```

fricas [B] time = 0.49, size = 63, normalized size = 3.15

$$-\frac{2\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos(bx+a)^{4}}{7\left(bd^{3}\cos(bx+a)^{4}-2\,bd^{3}\cos(bx+a)^{2}+bd^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] -2/7*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)^4/(b*d^3*cos(b*x + a)^4
 - 2*b*d^3*cos(b*x + a)^2 + b*d^3)
```

giac [A] time = 2.86, size = 26, normalized size = 1.30

$$-\frac{2}{7\sqrt{d\tan(bx+a)}\,bd^{2}\tan(bx+a)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] -2/7/(sqrt(d*tan(b*x + a))*b*d^2*tan(b*x + a)^3)
```

maple [B] time = 0.53, size = 38, normalized size = 1.90

$$-\frac{2\cos(bx+a)}{7b\sin(bx+a)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] -2/7/b*cos(b*x+a)/sin(b*x+a)/(d*sin(b*x+a)/cos(b*x+a))^(5/2)
```

maxima [A] time = 0.48, size = 23, normalized size = 1.15

$$-\frac{2}{7\,\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}\,b\tan\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] -2/7/((d*tan(b*x + a))^(5/2)*b*tan(b*x + a))
```

mupad [B] time = 7.40, size = 530, normalized size = 26.50

$$\frac{46\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{7\,b\,d^3\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}+\frac{12\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{5\,b\,d^3\,{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}^2}+\frac{24\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}\right.}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{35\,b\,d^3\,{\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}-1\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^2*(d*tan(a + b*x))^(5/2)),x)
```

```
[Out] (46*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i +
 b*x*2i) + 1))^(1/2))/(7*b*d^3*(exp(a*2i + b*x*2i) - 1)) + (12*(exp(a*2i +
b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(
1/2))/(5*b*d^3*(exp(a*2i + b*x*2i) - 1)^2) + (24*(exp(a*2i + b*x*2i) + 1)*(
-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(35*b*d^
3*(exp(a*2i + b*x*2i) - 1)^3) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i +
b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*48i)/(7*b*d^3*(exp(a*2i +
 b*x*2i)*1i - 1i)) + (144*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)
*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(35*b*d^3*(exp(a*2i + b*x*2i)*1
i - 1i)^2) + ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2)*144i)/(35*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)
^3) - (16*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(
a*2i + b*x*2i) + 1))^(1/2))/(7*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)^4)
```

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

$$\int \frac{\csc^{2}\left(a+bx\right)}{\left(d\tan\left(a+bx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Integral(csc(a + b*x)**2/(d*tan(a + b*x))**(5/2), x)
```

3.106 $\int \frac{\csc^4(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=43

$$-\frac{2d^3}{11b(d\tan(a+bx))^{11/2}}-\frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

```
[Out] -2/11*d^3/b/(d*tan(b*x+a))^(11/2)-2/7*d/b/(d*tan(b*x+a))^(7/2)
```

Rubi [A] time = 0.05, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 14}

$$-\frac{2d^3}{11b(d\tan(a+bx))^{11/2}}-\frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^4/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*d^3)/(11*b*(d*Tan[a + b*x])^(11/2)) - (2*d)/(7*b*(d*Tan[a + b*x])^(7/2)
)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\csc^4(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{d^2+x^2}{x^{13/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^2}{x^{13/2}}+\frac{1}{x^{9/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^3}{11b(d\tan(a+bx))^{11/2}} - \frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

Mathematica [A] time = 0.18, size = 50, normalized size = 1.16

$$\frac{2(2\cos(2(a+bx))-9)\cot^4(a+bx)\csc^2(a+bx)\sqrt{d\tan(a+bx)}}{77bd^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^4/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*(-9 + 2*Cos[2*(a + b*x)])*Cot[a + b*x]^4*Csc[a + b*x]^2*Sqrt[d*Tan[a + b
*x]])/(77*b*d^3)
```

fricas [B] time = 0.83, size = 91, normalized size = 2.12

$$-\frac{2\left(4\cos(bx+a)^6-11\cos(bx+a)^4\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{77\left(bd^3\cos(bx+a)^6-3\,bd^3\cos(bx+a)^4+3\,bd^3\cos(bx+a)^2-bd^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] -2/77*(4*cos(b*x + a)^6 - 11*cos(b*x + a)^4)*sqrt(d*sin(b*x + a)/cos(b*x +
a))/(b*d^3*cos(b*x + a)^6 - 3*b*d^3*cos(b*x + a)^4 + 3*b*d^3*cos(b*x + a)^2
 - b*d^3)
```

giac [A] time = 2.35, size = 45, normalized size = 1.05

$$-\frac{2\left(11\,d^3\tan(bx+a)^2+7\,d^3\right)}{77\sqrt{d\tan(bx+a)}\,bd^5\tan(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] -2/77*(11*d^3*tan(b*x + a)^2 + 7*d^3)/(sqrt(d*tan(b*x + a))*b*d^5*tan(b*x +
 a)^5)
```

maple [A] time = 0.59, size = 50, normalized size = 1.16

$$\frac{2\left(4\left(\cos^2\left(bx+a\right)\right)-11\right)\cos\left(bx+a\right)}{77b\sin\left(bx+a\right)^3\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^4/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 2/77/b*(4*cos(b*x+a)^2-11)*cos(b*x+a)/sin(b*x+a)^3/(d*sin(b*x+a)/cos(b*x+a)
)^(5/2)
```

maxima [A] time = 0.53, size = 35, normalized size = 0.81

$$-\frac{2\left(11\,d^2\tan\left(bx+a\right)^2+7\,d^2\right)d}{77\,\left(d\tan\left(bx+a\right)\right)^{\frac{11}{2}}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^4/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] -2/77*(11*d^2*tan(b*x + a)^2 + 7*d^2)*d/((d*tan(b*x + a))^(11/2)*b)
```

mupad [B] time = 12.14, size = 831, normalized size = 19.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^4*(d*tan(a + b*x))^(5/2)),x)
```

```
[Out] ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*
x*2i) + 1))^(1/2)*2048i)/(165*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)) - (7768*(
exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*
2i) + 1))^(1/2))/(945*b*d^3*(exp(a*2i + b*x*2i) - 1)^2) - (4232*(exp(a*2i +
 b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^
(1/2))/(495*b*d^3*(exp(a*2i + b*x*2i) - 1)^3) - (1328*(exp(a*2i + b*x*2i) +
 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(23
1*b*d^3*(exp(a*2i + b*x*2i) - 1)^4) - (160*(exp(a*2i + b*x*2i) + 1)*(-(d*(e
xp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(99*b*d^3*(exp
(a*2i + b*x*2i) - 1)^5) - (14456*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i +
b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(1155*b*d^3*(exp(a*2i +
```

```
b*x*2i) - 1)) - (86528*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i
 - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(10395*b*d^3*(exp(a*2i + b*x*2i)*1
i - 1i)^2) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2)*3904i)/(315*b*d^3*(exp(a*2i + b*x*2i)*1i - 1
i)^3) + (4160*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2))/(231*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)^4)
+ ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i +
b*x*2i) + 1))^(1/2)*1600i)/(99*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)^5) - (64*
(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x
*2i) + 1))^(1/2))/(11*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)^6)
```

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

$$\int \frac{\csc^4(a+bx)}{(d\tan(a+bx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**4/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Integral(csc(a + b*x)**4/(d*tan(a + b*x))**(5/2), x)
```

3.107 $\int \frac{\csc^6(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=65

$$-\frac{2d^5}{15b(d\tan(a+bx))^{15/2}}-\frac{4d^3}{11b(d\tan(a+bx))^{11/2}}-\frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

```
[Out] -2/15*d^5/b/(d*tan(b*x+a))^(15/2)-4/11*d^3/b/(d*tan(b*x+a))^(11/2)-2/7*d/b/
(d*tan(b*x+a))^(7/2)
```

Rubi [A] time = 0.06, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2591, 270}

$$-\frac{2d^5}{15b(d\tan(a+bx))^{15/2}}-\frac{4d^3}{11b(d\tan(a+bx))^{11/2}}-\frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^6/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*d^5)/(15*b*(d*Tan[a + b*x])^(15/2)) - (4*d^3)/(11*b*(d*Tan[a + b*x])^(1
1/2)) - (2*d)/(7*b*(d*Tan[a + b*x])^(7/2))
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\csc^6(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx = \frac{d\,\text{Subst}\left(\int \frac{\left(d^2+x^2\right)^2}{x^{17/2}}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{d\,\text{Subst}\left(\int \left(\frac{d^4}{x^{17/2}} + \frac{2d^2}{x^{13/2}} + \frac{1}{x^{9/2}}\right)dx, x, d\tan(a+bx)\right)}{b}$$
$$= -\frac{2d^5}{15b(d\tan(a+bx))^{15/2}} - \frac{4d^3}{11b(d\tan(a+bx))^{11/2}} - \frac{2d}{7b(d\tan(a+bx))^{7/2}}$$

Mathematica [A] time = 0.24, size = 60, normalized size = 0.92

$$\frac{2(44\cos(2(a+bx)) - 4\cos(4(a+bx)) - 117)\cot^4(a+bx)\csc^4(a+bx)\sqrt{d\tan(a+bx)}}{1155bd^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^6/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*(-117 + 44*Cos[2*(a + b*x)] - 4*Cos[4*(a + b*x)])*Cot[a + b*x]^4*Csc[a +
 b*x]^4*Sqrt[d*Tan[a + b*x]])/(1155*b*d^3)
```

fricas [B] time = 0.84, size = 114, normalized size = 1.75

$$-\frac{2\left(32\cos(bx+a)^8 - 120\cos(bx+a)^6 + 165\cos(bx+a)^4\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{1155\left(bd^3\cos(bx+a)^8 - 4bd^3\cos(bx+a)^6 + 6bd^3\cos(bx+a)^4 - 4bd^3\cos(bx+a)^2 + bd^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] -2/1155*(32*cos(b*x + a)^8 - 120*cos(b*x + a)^6 + 165*cos(b*x + a)^4)*sqrt(
d*sin(b*x + a)/cos(b*x + a))/(b*d^3*cos(b*x + a)^8 - 4*b*d^3*cos(b*x + a)^6
 + 6*b*d^3*cos(b*x + a)^4 - 4*b*d^3*cos(b*x + a)^2 + b*d^3)
```

giac [A] time = 2.99, size = 58, normalized size = 0.89

$$-\frac{2\left(165\,d^5\tan(bx+a)^4 + 210\,d^5\tan(bx+a)^2 + 77\,d^5\right)}{1155\sqrt{d\tan(bx+a)}\,bd^7\tan(bx+a)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] -2/1155*(165*d^5*tan(b*x + a)^4 + 210*d^5*tan(b*x + a)^2 + 77*d^5)/(sqrt(d*
tan(b*x + a))*b*d^7*tan(b*x + a)^7)
```

maple [A] time = 0.64, size = 60, normalized size = 0.92

$$-\frac{2\left(32\left(\cos^{4}\left(bx+a\right)\right)-120\left(\cos^{2}\left(bx+a\right)\right)+165\right)\cos\left(bx+a\right)}{1155b\sin\left(bx+a\right)^{5}\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^6/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] -2/1155/b*(32*cos(b*x+a)^4-120*cos(b*x+a)^2+165)*cos(b*x+a)/sin(b*x+a)^5/(d
*sin(b*x+a)/cos(b*x+a))^(5/2)
```

maxima [A] time = 0.33, size = 48, normalized size = 0.74

$$-\frac{2\left(165\,d^{4}\tan\left(bx+a\right)^{4}+210\,d^{4}\tan\left(bx+a\right)^{2}+77\,d^{4}\right)d}{1155\,\left(d\tan\left(bx+a\right)\right)^{\frac{15}{2}}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^6/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] -2/1155*(165*d^4*tan(b*x + a)^4 + 210*d^4*tan(b*x + a)^2 + 77*d^4)*d/((d*ta
n(b*x + a))^(15/2)*b)
```

mupad [B] time = 14.01, size = 1132, normalized size = 17.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^6*(d*tan(a + b*x))^(5/2)),x)
```

```
[Out] (199232*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*
2i + b*x*2i) + 1))^(1/2))/(12285*b*d^3*(exp(a*2i + b*x*2i) - 1)) + (1581376
*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*
x*2i) + 1))^(1/2))/(135135*b*d^3*(exp(a*2i + b*x*2i) - 1)^2) + (4539104*(ex
p(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i
) + 1))^(1/2))/(225225*b*d^3*(exp(a*2i + b*x*2i) - 1)^3) + (1152*(exp(a*2i
+ b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))
^(1/2))/(35*b*d^3*(exp(a*2i + b*x*2i) - 1)^4) + (74528*(exp(a*2i + b*x*2i)
```

```
+ 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(2
145*b*d^3*(exp(a*2i + b*x*2i) - 1)^5) + (1088*(exp(a*2i + b*x*2i) + 1)*(-(d
*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(55*b*d^3*(
exp(a*2i + b*x*2i) - 1)^6) + (896*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i +
 b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(195*b*d^3*(exp(a*2i +
b*x*2i) - 1)^7) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1
i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*439808i)/(27027*b*d^3*(exp(a*2i + b*x*2
i)*1i - 1i)) + (1573888*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1
i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(135135*b*d^3*(exp(a*2i + b*x*2i)
*1i - 1i)^2) + ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))
/(exp(a*2i + b*x*2i) + 1))^(1/2)*4557824i)/(225225*b*d^3*(exp(a*2i + b*x*2i
)*1i - 1i)^3) - (7168*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i
- 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(165*b*d^3*(exp(a*2i + b*x*2i)*1i -
 1i)^4) - ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp
(a*2i + b*x*2i) + 1))^(1/2)*172288i)/(2145*b*d^3*(exp(a*2i + b*x*2i)*1i - 1
i)^5) + (5376*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2))/(55*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)^6) +
 ((exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b
*x*2i) + 1))^(1/2)*12544i)/(195*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)^7) - (25
6*(exp(a*2i + b*x*2i) + 1)*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b
*x*2i) + 1))^(1/2))/(15*b*d^3*(exp(a*2i + b*x*2i)*1i - 1i)^8)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**6/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.108 $\int \frac{\sin^7(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=144

$$\frac{3\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{40bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}}-\frac{3\sin^5(a+bx)}{70bd(d\tan(a+bx))^{3/2}}-\frac{\sin^3(a+bx)}{20bd(d\tan(a+bx))^{3/2}}$$

```
[Out] -3/40*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+
b*x),2^(1/2))*sin(b*x+a)/b/d^2/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)-1/
20*sin(b*x+a)^3/b/d/(d*tan(b*x+a))^(3/2)-3/70*sin(b*x+a)^5/b/d/(d*tan(b*x+a
))^(3/2)+1/7*sin(b*x+a)^7/b/d/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.19, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2596, 2598, 2601, 2572, 2639}

$$\frac{3\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{40bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}}-\frac{3\sin^5(a+bx)}{70bd(d\tan(a+bx))^{3/2}}-\frac{\sin^3(a+bx)}{20bd(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^7/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] -Sin[a + b*x]^3/(20*b*d*(d*Tan[a + b*x])^(3/2)) - (3*Sin[a + b*x]^5)/(70*b*
d*(d*Tan[a + b*x])^(3/2)) + Sin[a + b*x]^7/(7*b*d*(d*Tan[a + b*x])^(3/2)) +
 (3*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(40*b*d^2*Sqrt[Sin[2*a + 2*b
*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\sin^7(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx = \frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}} + \frac{3\int \frac{\sin^5(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{14d^2}$$

$$= -\frac{3\sin^5(a+bx)}{70bd(d\tan(a+bx))^{3/2}} + \frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}} + \frac{3\int \frac{\sin^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{20d^2}$$

$$= -\frac{\sin^3(a+bx)}{20bd(d\tan(a+bx))^{3/2}} - \frac{3\sin^5(a+bx)}{70bd(d\tan(a+bx))^{3/2}} + \frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}} + \frac{3\int \frac{\sin(a \cdots}{\sqrt{d\tan \cdots}}}{40 \cdots}$$

$$= -\frac{\sin^3(a+bx)}{20bd(d\tan(a+bx))^{3/2}} - \frac{3\sin^5(a+bx)}{70bd(d\tan(a+bx))^{3/2}} + \frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}} + \frac{\left(3\sqrt{\sin(a \cdots}\right.}{4 \cdots}$$

$$= -\frac{\sin^3(a+bx)}{20bd(d\tan(a+bx))^{3/2}} - \frac{3\sin^5(a+bx)}{70bd(d\tan(a+bx))^{3/2}} + \frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}} + \frac{(3\sin(a + \cdots}{40d^2\sqrt{\sin \cdots}}$$

$$= -\frac{\sin^3(a+bx)}{20bd(d\tan(a+bx))^{3/2}} - \frac{3\sin^5(a+bx)}{70bd(d\tan(a+bx))^{3/2}} + \frac{\sin^7(a+bx)}{7bd(d\tan(a+bx))^{3/2}} + \frac{3E\left(a \cdots\right.}{40bd^2\sqrt{\sin \cdots}}$$

Mathematica [C] time = 1.57, size = 122, normalized size = 0.85

$$\frac{\sqrt{d\tan(a+bx)}\left(112\tan(a+bx)\sec(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)-(15\sin(a+bx)+29\sin(3(a+bx))-\right.}{2240bd^3\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^7/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (Sqrt[d*Tan[a + b*x]]*(-(Sqrt[Sec[a + b*x]^2]*(15*Sin[a + b*x] + 29*Sin[3*(
a + b*x)] + 9*Sin[5*(a + b*x)] - 5*Sin[7*(a + b*x)])) + 112*Hypergeometric2
F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x]*Tan[a + b*x]))/(2240*b*d^3*
Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(\cos(bx+a)^6-3\cos(bx+a)^4+3\cos(bx+a)^2-1\right)\sqrt{d\tan(bx+a)}\,\sin(bx+a)}{d^3\tan(bx+a)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^7/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(cos(b*x + a)^6 - 3*cos(b*x + a)^4 + 3*cos(b*x + a)^2 - 1)*sqrt(d
*tan(b*x + a))*sin(b*x + a)/(d^3*tan(b*x + a)^3), x)
```

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

$$\int \frac{\sin(bx+a)^7}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^7/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^7/(d*tan(b*x + a))^(5/2), x)
```

maple [B] time = 0.56, size = 563, normalized size = 3.91

$$-\frac{(-1+\cos(bx+a))^2\left(40\sqrt{2}\,\left(\cos^8(bx+a)\right)-108\sqrt{2}\,\left(\cos^6(bx+a)\right)+42\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+\right.}{\sin(bx+a)}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^7/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] -1/560/b*(-1+cos(b*x+a))^2*(40*2^(1/2)*cos(b*x+a)^8-108*2^(1/2)*cos(b*x+a)^
6+42*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x
+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Elliptic
E(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-21*((-1+cos(b*x
+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+82*cos(b*x+a)^4*2^(1/2)+42*((-1+
cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)
*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(
b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-21*((-1+cos(b*x+a))/sin(b*x+a))^(1/2
)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/
sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/
2*2^(1/2))+7*cos(b*x+a)^2*2^(1/2)-21*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/(
d*sin(b*x+a)/cos(b*x+a))^(5/2)/sin(b*x+a)^2/cos(b*x+a)^3*2^(1/2)
```

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

$$\int \frac{\sin(bx+a)^7}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^7/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)^7/(d*tan(b*x + a))^(5/2), x)
```

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

$$\int \frac{\sin(a+b\,x)^7}{(d\tan(a+b\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^7/(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)^7/(d*tan(a + b*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**7/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.109 $\int \frac{\sin^5(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=114

$$\frac{3\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{20bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{\sin^5(a+bx)}{5bd(d\tan(a+bx))^{3/2}}-\frac{\sin^3(a+bx)}{10bd(d\tan(a+bx))^{3/2}}$$

```
[Out] -3/20*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+
b*x),2^(1/2))*sin(b*x+a)/b/d^2/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)-1/
10*sin(b*x+a)^3/b/d/(d*tan(b*x+a))^(3/2)+1/5*sin(b*x+a)^5/b/d/(d*tan(b*x+a)
)^(3/2)
```

Rubi [A] time = 0.14, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2596, 2598, 2601, 2572, 2639}

$$\frac{3\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{20bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{\sin^5(a+bx)}{5bd(d\tan(a+bx))^{3/2}}-\frac{\sin^3(a+bx)}{10bd(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^5/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] -Sin[a + b*x]^3/(10*b*d*(d*Tan[a + b*x])^(3/2)) + Sin[a + b*x]^5/(5*b*d*(d*
Tan[a + b*x])^(3/2)) + (3*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(20*b*
d^2*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
```

```
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^5(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx &= \frac{\sin^5(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{3\int \frac{\sin^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{10d^2} \\
&= -\frac{\sin^3(a+bx)}{10bd(d\tan(a+bx))^{3/2}} + \frac{\sin^5(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{3\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{20d^2} \\
&= -\frac{\sin^3(a+bx)}{10bd(d\tan(a+bx))^{3/2}} + \frac{\sin^5(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{\left(3\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\,\sqrt{\cdots}}{20d^2\sqrt{\cos(a+bx)}\,\sqrt{d\tan(\cdots}} \\
&= -\frac{\sin^3(a+bx)}{10bd(d\tan(a+bx))^{3/2}} + \frac{\sin^5(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{(3\sin(a+bx))\int \sqrt{\sin(2a+2bx)}\,d\cdots}{20d^2\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+bx\cdots}} \\
&= -\frac{\sin^3(a+bx)}{10bd(d\tan(a+bx))^{3/2}} + \frac{\sin^5(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{3E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{20bd^2\sqrt{\sin(2a+2bx)}\,\sqrt{d\tan(a+b\cdots}}
\end{aligned}$$

Mathematica [C]   time = 1.09, size = 100, normalized size = 0.88

$$\frac{\sqrt{d\tan(a+bx)}\left(8\tan(a+bx)\sec(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)-(\sin(3(a+bx))+\sin(5(a+bx)))\sqrt{\sec^2(\cdots}\right.}{80bd^3\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^5/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (Sqrt[d*Tan[a + b*x]]*(-(Sqrt[Sec[a + b*x]^2]*(Sin[3*(a + b*x)] + Sin[5*(a
+ b*x)])) + 8*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x
]*Tan[a + b*x]))/(80*b*d^3*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(\cos\left(bx+a\right)^{4}-2\,\cos\left(bx+a\right)^{2}+1\right)\sqrt{d\tan\left(bx+a\right)}\,\sin\left(bx+a\right)}{d^{3}\tan\left(bx+a\right)^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^5/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral((cos(b*x + a)^4 - 2*cos(b*x + a)^2 + 1)*sqrt(d*tan(b*x + a))*sin(b
*x + a)/(d^3*tan(b*x + a)^3), x)
```

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

$$\int \frac{\sin\left(bx+a\right)^{5}}{\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^5/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^5/(d*tan(b*x + a))^(5/2), x)
```

maple [B] time = 0.47, size = 550, normalized size = 4.82

$$\frac{\left(-1+\cos\left(bx+a\right)\right)^{2}\left(4\sqrt{2}\,\left(\cos^{6}\left(bx+a\right)\right)-6\left(\cos^{4}\left(bx+a\right)\right)\sqrt{2}\,-6\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{1\cdots}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^5/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/40/b*(-1+cos(b*x+a))^2*(4*2^(1/2)*cos(b*x+a)^6-6*cos(b*x+a)^4*2^(1/2)-6*(
(-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticE(((1-
cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+3*((-1+cos(b*x+a))/si
n(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a
)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x
```

```
+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((
-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(
b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^
(1/2))+3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-c
os(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-cos(b*x+a)^2*2^(1/2)+3
*cos(b*x+a)*2^(1/2))*(cos(b*x+a)+1)^2/cos(b*x+a)^3/sin(b*x+a)^2/(d*sin(b*x+
a)/cos(b*x+a))^(5/2)*2^(1/2)
```

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

$$\int \frac{\sin(bx+a)^5}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^5/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)^5/(d*tan(b*x + a))^(5/2), x)
```

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

$$\int \frac{\sin(a+b\,x)^5}{(d\tan(a+b\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^5/(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)^5/(d*tan(a + b*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**5/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.110 $\int \frac{\sin^3(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=84

$$\frac{\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{\sin^3(a+bx)}{3bd(d\tan(a+bx))^{3/2}}$$

```
[Out] -1/2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b
*x),2^(1/2))*sin(b*x+a)/b/d^2/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)+1/3
*sin(b*x+a)^3/b/d/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2596, 2601, 2572, 2639}

$$\frac{\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}+\frac{\sin^3(a+bx)}{3bd(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] Sin[a + b*x]^3/(3*b*d*(d*Tan[a + b*x])^(3/2)) + (EllipticE[a - Pi/4 + b*x,
2]*Sin[a + b*x])/(2*b*d^2*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^3(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx &= \frac{\sin^3(a+bx)}{3bd(d\tan(a+bx))^{3/2}} + \frac{\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{2d^2} \\
&= \frac{\sin^3(a+bx)}{3bd(d\tan(a+bx))^{3/2}} + \frac{\sqrt{\sin(a+bx)}\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}\,dx}{2d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}} \\
&= \frac{\sin^3(a+bx)}{3bd(d\tan(a+bx))^{3/2}} + \frac{\sin(a+bx)\int \sqrt{\sin(2a+2bx)}\,dx}{2d^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}} \\
&= \frac{\sin^3(a+bx)}{3bd(d\tan(a+bx))^{3/2}} + \frac{E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{2bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}
\end{aligned}$$

Mathematica [C] time = 0.63, size = 97, normalized size = 1.15

$$\frac{\sqrt{d\tan(a+bx)}\left(4\tan(a+bx)\sec(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+(\sin(a+bx)+\sin(3(a+bx)))\sqrt{\sec^2(a+bx)}\right)}{12bd^3\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (Sqrt[d*Tan[a + b*x]]*(Sqrt[Sec[a + b*x]^2]*(Sin[a + b*x] + Sin[3*(a + b*x)
]) + 4*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x]*Tan[a
 + b*x]))/(12*b*d^3*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(\cos(bx+a)^2-1\right)\sqrt{d\tan(bx+a)}\,\sin(bx+a)}{d^3\tan(bx+a)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(cos(b*x + a)^2 - 1)*sqrt(d*tan(b*x + a))*sin(b*x + a)/(d^3*tan(b
*x + a)^3), x)
```

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

$$\int \frac{\sin(bx+a)^3}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^3/(d*tan(b*x + a))^(5/2), x)
```

maple [B] time = 0.53, size = 537, normalized size = 6.39

$$\frac{(-1+\cos(bx+a))^2\left(3\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\cos(bx+a)\,\mathrm{EllipticF}\left(\sqrt{\frac{1-}{}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/12/b*(-1+cos(b*x+a))^2*(3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x
+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2
^(1/2))-6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/si
n(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Ell
ipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*cos(b*x+
a)^4*2^(1/2)+3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticF
(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-6*((-1+cos(b*x+a
))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/s
in(b*x+a))^(1/2),1/2*2^(1/2))-cos(b*x+a)^2*2^(1/2)+3*cos(b*x+a)*2^(1/2))*(c
os(b*x+a)+1)^2/sin(b*x+a)^2/(d*sin(b*x+a)/cos(b*x+a))^(5/2)/cos(b*x+a)^3*2^
(1/2)
```

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

$$\int \frac{\sin(bx+a)^3}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)^3/(d*tan(b*x + a))^(5/2), x)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^3}{{\left(d\,\tan\left(a+b\,x\right)\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(d*tan(a + b*x))^(5/2),x)
```

```
[Out] int(sin(a + b*x)^3/(d*tan(a + b*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Timed out
```

3.111 $\int \frac{\sin(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=78

$$-\frac{3\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{2\sin(a+bx)}{bd(d\tan(a+bx))^{3/2}}$$

```
[Out] 3*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x)
,2^(1/2))*sin(b*x+a)/b/d^2/sin(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)-2*sin(
b*x+a)/b/d/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.09, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2597, 2601, 2572, 2639}

$$-\frac{3\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{2\sin(a+bx)}{bd(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*Sin[a + b*x])/(b*d*(d*Tan[a + b*x])^(3/2)) - (3*EllipticE[a - Pi/4 + b*
x, 2]*Sin[a + b*x])/(b*d^2*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx &= -\frac{2\sin(a+bx)}{bd(d\tan(a+bx))^{3/2}}-\frac{3\int \frac{\sin(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{d^2}\\
&= -\frac{2\sin(a+bx)}{bd(d\tan(a+bx))^{3/2}}-\frac{\left(3\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}\,dx}{d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2\sin(a+bx)}{bd(d\tan(a+bx))^{3/2}}-\frac{(3\sin(a+bx))\int \sqrt{\sin(2a+2bx)}\,dx}{d^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}\\
&= -\frac{2\sin(a+bx)}{bd(d\tan(a+bx))^{3/2}}-\frac{3E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}
\end{aligned}
$$

Mathematica [C] time = 0.41, size = 69, normalized size = 0.88

$$
-\frac{2\cos(a+bx)\left(\tan^2(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+1\right)}{bd^2\sqrt{d\tan(a+bx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*Cos[a + b*x]*(1 + Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sqr
t[Sec[a + b*x]^2]*Tan[a + b*x]^2))/(b*d^2*Sqrt[d*Tan[a + b*x]])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$
\text{integral}\left(\frac{\sqrt{d\tan(bx+a)}\,\sin(bx+a)}{d^3\tan(bx+a)^3},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*sin(b*x + a)/(d^3*tan(b*x + a)^3), x)
```

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

$$\int \frac{\sin (bx + a)}{(d \tan (bx + a))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)/(d*tan(b*x + a))^(5/2), x)
```

maple [B] time = 0.44, size = 503, normalized size = 6.45

$$\frac{\left(6\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\cos(bx+a)\,\mathrm{EllipticE}\left(\sqrt{\frac{1-\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}, \frac{\sqrt{2}}{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/2/b*(6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*Elli
pticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-3*((-1+cos(
b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1
-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+
a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+6*((-1+cos(b*x+a))/sin(b*x+a)
)^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*
x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1
/2),1/2*2^(1/2))-3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b
*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*Ellip
ticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+cos(b*x+a)^2
*2^(1/2)-3*cos(b*x+a)*2^(1/2))*sin(b*x+a)^2/cos(b*x+a)^3/(d*sin(b*x+a)/cos(
b*x+a))^(5/2)*2^(1/2)
```

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

$$\int \frac{\sin (bx + a)}{(d \tan (bx + a))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sin(b*x + a)/(d*tan(b*x + a))^(5/2), x)
```

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

$$\int \frac{\sin(a+b\,x)}{(d\tan(a+b\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(d*tan(a + b*x))^(5/2),x)
[Out] int(sin(a + b*x)/(d*tan(a + b*x))^(5/2), x)
```

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

$$\int \frac{\sin(a+bx)}{(d\tan(a+bx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*tan(b*x+a))**(5/2),x)
[Out] Integral(sin(a + b*x)/(d*tan(a + b*x))**(5/2), x)
```

3.112 $\int \frac{\csc(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=110

$$\frac{6\cos(a+bx)}{5bd^2\sqrt{d\tan(a+bx)}}+\frac{6\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{5bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{2\csc(a+bx)}{5bd(d\tan(a+bx))^{3/2}}$$

```
[Out] 6/5*cos(b*x+a)/b/d^2/(d*tan(b*x+a))^(1/2)-6/5*(sin(a+1/4*Pi+b*x)^2)^(1/2)/s
in(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*sin(b*x+a)/b/d^2/sin(
2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)-2/5*csc(b*x+a)/b/d/(d*tan(b*x+a))^(3/
2)
```

Rubi [A] time = 0.14, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2597, 2601, 2570, 2572, 2639}

$$\frac{6\cos(a+bx)}{5bd^2\sqrt{d\tan(a+bx)}}+\frac{6\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{5bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{2\csc(a+bx)}{5bd(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*Csc[a + b*x])/(5*b*d*(d*Tan[a + b*x])^(3/2)) + (6*Cos[a + b*x])/(5*b*d^
2*Sqrt[d*Tan[a + b*x]]) + (6*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(5*
b*d^2*Sqrt[Sin[2*a + 2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2570

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[((b*Cos[e + f*x])^(n + 1)*(a*Sin[e + f*x])^(m + 1))/(
a*b*f*(m + 1)), x] + Dist[(m + n + 2)/(a^2*(m + 1)), Int[(b*Cos[e + f*x])^n
*(a*Sin[e + f*x])^(m + 2), x], x] /; FreeQ[{a, b, e, f, n}, x] && LtQ[m, -1
] && IntegersQ[2*m, 2*n]
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
```

```
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\csc(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx &= -\frac{2\csc(a+bx)}{5bd(d\tan(a+bx))^{3/2}} - \frac{3\int \frac{\csc(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{5d^2} \\
&= -\frac{2\csc(a+bx)}{5bd(d\tan(a+bx))^{3/2}} - \frac{\left(3\sqrt{\sin(a+bx)}\right)\int \frac{\sqrt{\cos(a+bx)}}{\sin^{\frac{3}{2}}(a+bx)}\,dx}{5d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}} \\
&= -\frac{2\csc(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{6\cos(a+bx)}{5bd^2\sqrt{d\tan(a+bx)}} + \frac{\left(6\sqrt{\sin(a+bx)}\right)\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}\,dx}{5d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}} \\
&= -\frac{2\csc(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{6\cos(a+bx)}{5bd^2\sqrt{d\tan(a+bx)}} + \frac{(6\sin(a+bx))\int \sqrt{\sin(2a+2bx)}\,dx}{5d^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}} \\
&= -\frac{2\csc(a+bx)}{5bd(d\tan(a+bx))^{3/2}} + \frac{6\cos(a+bx)}{5bd^2\sqrt{d\tan(a+bx)}} + \frac{6E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sin(a+bx)}{5bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}
\end{aligned}$$

Mathematica [C] time = 1.79, size = 105, normalized size = 0.95

$$\frac{2\sin(a+bx)\sqrt{d\tan(a+bx)}\left(2\sec^2(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)-\left(\csc^4(a+bx)-4\csc^2(a+bx)+3\right)\sqrt{s\cdots}\right)}{5bd^3\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*(2*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x]^2 - (3
 - 4*Csc[a + b*x]^2 + Csc[a + b*x]^4)*Sqrt[Sec[a + b*x]^2])*Sin[a + b*x]*Sq
rt[d*Tan[a + b*x]])/(5*b*d^3*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(bx+a\right)}\,\csc\left(bx+a\right)}{d^3\tan\left(bx+a\right)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)/(d^3*tan(b*x + a)^3), x)
```

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

$$\int \frac{\csc\left(bx+a\right)}{\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)/(d*tan(b*x + a))^(5/2), x)
```

maple [B] time = 0.53, size = 965, normalized size = 8.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)/(d*tan(b*x+a))^(5/2),x)
```

```
[Out] 1/5/b*(6*cos(b*x+a)^3*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*El
lipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-3*cos(b*x
+a)^3*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+
a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(
b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+6*cos(b*x+a)^2*((1-cos(b*
x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^
(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2),1/2*2^(1/2))-3*cos(b*x+a)^2*((1-cos(b*x+a)+sin(b*x+a))
/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b
*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
```

```
1/2),1/2*2^(1/2))-6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(
b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(
b*x+a)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+
3*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a)
)^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF((
(1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-3*cos(b*x+a)^3*2^(
1/2)-6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b
*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+3*((-1+cos(b*x+a))/sin(b
*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2),1/2*2^(1/2))-cos(b*x+a)^2*2^(1/2)+3*cos(b*x+a)*2^(1/2))/cos(b*x+a)
^3/(d*sin(b*x+a)/cos(b*x+a))^(5/2)*2^(1/2)
```

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

$$\int \frac{\csc\left(bx+a\right)}{\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(csc(b*x + a)/(d*tan(b*x + a))^(5/2), x)
```

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

$$\int \frac{1}{\sin\left(a+b\,x\right)\,{\left(d\,\tan\left(a+b\,x\right)\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)*(d*tan(a + b*x))^(5/2)),x)
```

```
[Out] int(1/(sin(a + b*x)*(d*tan(a + b*x))^(5/2)), x)
```

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

$$\int \frac{\csc\left(a+bx\right)}{\left(d\tan\left(a+bx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*tan(b*x+a))**(5/2),x)
```

```
[Out] Integral(csc(a + b*x)/(d*tan(a + b*x))**(5/2), x)
```

3.113 $\int \frac{\csc^3(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=140

$$\frac{4\cos(a+bx)}{15bd^2\sqrt{d\tan(a+bx)}}+\frac{4\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{15bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}}+\frac{2\csc(a+bx)}{15bd(d\tan(a+bx))^{3/2}}$$

```
[Out] 4/15*cos(b*x+a)/b/d^2/(d*tan(b*x+a))^(1/2)-4/15*(sin(a+1/4*Pi+b*x)^2)^(1/2)
/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*sin(b*x+a)/b/d^2/si
n(2*b*x+2*a)^(1/2)/(d*tan(b*x+a))^(1/2)+2/15*csc(b*x+a)/b/d/(d*tan(b*x+a))^
(3/2)-2/9*csc(b*x+a)^3/b/d/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.18, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2597, 2599, 2601, 2570, 2572, 2639}

$$\frac{4\cos(a+bx)}{15bd^2\sqrt{d\tan(a+bx)}}+\frac{4\sin(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)}{15bd^2\sqrt{\sin(2a+2bx)}\sqrt{d\tan(a+bx)}}-\frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}}+\frac{2\csc(a+bx)}{15bd(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[a + b*x]^3/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*Csc[a + b*x])/(15*b*d*(d*Tan[a + b*x])^(3/2)) - (2*Csc[a + b*x]^3)/(9*b*
d*(d*Tan[a + b*x])^(3/2)) + (4*Cos[a + b*x])/(15*b*d^2*Sqrt[d*Tan[a + b*x]]
) + (4*EllipticE[a - Pi/4 + b*x, 2]*Sin[a + b*x])/(15*b*d^2*Sqrt[Sin[2*a +
2*b*x]]*Sqrt[d*Tan[a + b*x]])
```

Rule 2570

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[((b*Cos[e + f*x])^(n + 1)*(a*Sin[e + f*x])^(m + 1))/(
a*b*f*(m + 1)), x] + Dist[(m + n + 2)/(a^2*(m + 1)), Int[(b*Cos[e + f*x])^n
*(a*Sin[e + f*x])^(m + 2), x], x] /; FreeQ[{a, b, e, f, n}, x] && LtQ[m, -1
] && IntegersQ[2*m, 2*n]
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\csc^3(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx = -\frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}} - \frac{\int \frac{\csc^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{3d^2}$$

$$= \frac{2\csc(a+bx)}{15bd(d\tan(a+bx))^{3/2}} - \frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}} - \frac{2\int \frac{\csc(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{15d^2}$$

$$= \frac{2\csc(a+bx)}{15bd(d\tan(a+bx))^{3/2}} - \frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}} - \frac{\left(2\sqrt{\sin(a+bx)}\right)\int \frac{\sqrt{\cos(a+bx)}}{\sin^{\frac{3}{2}}(a+bx)}\,dx}{15d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}$$

$$= \frac{2\csc(a+bx)}{15bd(d\tan(a+bx))^{3/2}} - \frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}} + \frac{4\cos(a+bx)}{15bd^2\sqrt{d\tan(a+bx)}} + \frac{\left(4\sqrt{\sin(a\right.}}{15}$$

$$= \frac{2\csc(a+bx)}{15bd(d\tan(a+bx))^{3/2}} - \frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}} + \frac{4\cos(a+bx)}{15bd^2\sqrt{d\tan(a+bx)}} + \frac{(4\sin(a+}{15d^2\sqrt{\sin(}}$$

$$= \frac{2\csc(a+bx)}{15bd(d\tan(a+bx))^{3/2}} - \frac{2\csc^3(a+bx)}{9bd(d\tan(a+bx))^{3/2}} + \frac{4\cos(a+bx)}{15bd^2\sqrt{d\tan(a+bx)}} + \frac{4E\left(a\right.}{15bd^2\sqrt{\sin}}$$

Mathematica [C] time = 0.84, size = 116, normalized size = 0.83

$$\frac{2\sin(a+bx)\sqrt{d\tan(a+bx)}\left(4\sec^2(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+\left(-5\csc^6(a+bx)+8\csc^4(a+bx)+\right.}{45bd^3\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[a + b*x]^3/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*(4*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x]^2 + (-
6 + 3*Csc[a + b*x]^2 + 8*Csc[a + b*x]^4 - 5*Csc[a + b*x]^6)*Sqrt[Sec[a + b*
x]^2])*Sin[a + b*x]*Sqrt[d*Tan[a + b*x]])/(45*b*d^3*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan(bx+a)}\csc(bx+a)^3}{d^3\tan(bx+a)^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*csc(b*x + a)^3/(d^3*tan(b*x + a)^3), x)
```

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

$$\int \frac{\csc(bx+a)^3}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(5/2),x, algorithm="giac")
[Out] integrate(csc(b*x + a)^3/(d*tan(b*x + a))^(5/2), x)
```

maple [B] time = 0.61, size = 1455, normalized size = 10.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^3/(d*tan(b*x+a))^(5/2),x)
[Out] -1/45/b*(12*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+si
n(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((
1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)^5-6*((1-
cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*
x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin
(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)^5+12*((1-cos(b*x+a)+sin(
b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-
1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*
x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)^4-6*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/si
n(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*
2^(1/2))*cos(b*x+a)^4-24*cos(b*x+a)^3*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a)
)^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(
b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^
(1/2))+12*cos(b*x+a)^3*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*E
llipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-24*cos(b
*x+a)^2*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*
x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+12*cos(b*x+a)^2*((1-cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF(((1-cos(b*x+a)+sin(b*
x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-6*2^(1/2)*cos(b*x+a)^5+12*((-1+cos(b*x
+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticE(((1-cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-6*((-1+cos(b*x+a))/sin(b*x+a))^(
```

```
1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*cos(b*x+a)*EllipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*
x+a))^(1/2),1/2*2^(1/2))+3*cos(b*x+a)^4*2^(1/2)+12*((-1+cos(b*x+a))/sin(b*x
+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin
(b*x+a))/sin(b*x+a))^(1/2)*EllipticE(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2),1/2*2^(1/2))-6*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+si
n(b*x+a))/sin(b*x+a))^(1/2)*((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*El
lipticF(((1-cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+12*cos(b*
x+a)^3*2^(1/2)+2*cos(b*x+a)^2*2^(1/2)-6*cos(b*x+a)*2^(1/2))/sin(b*x+a)^2/(d
*sin(b*x+a)/cos(b*x+a))^(5/2)/cos(b*x+a)^3*2^(1/2)
```

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

$$\int \frac{\csc(bx+a)^3}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")
[Out] integrate(csc(b*x + a)^3/(d*tan(b*x + a))^(5/2), x)
```

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

$$\int \frac{1}{\sin(a+b\,x)^3\,(d\tan(a+b\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^3*(d*tan(a + b*x))^(5/2)),x)
[Out] int(1/(sin(a + b*x)^3*(d*tan(a + b*x))^(5/2)), x)
```

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

$$\int \frac{\csc^3(a+bx)}{(d\tan(a+bx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3/(d*tan(b*x+a))**(5/2),x)
[Out] Integral(csc(a + b*x)**3/(d*tan(a + b*x))**(5/2), x)
```

3.114 $\int (a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}\,dx$

Optimal. Leaf size=68

$$-\frac{8a^2b\sqrt{a\sin(e+fx)}}{5f\sqrt{b\tan(e+fx)}}-\frac{2b(a\sin(e+fx))^{5/2}}{5f\sqrt{b\tan(e+fx)}}$$

```
[Out] -2/5*b*(a*sin(f*x+e))^(5/2)/f/(b*tan(f*x+e))^(1/2)-8/5*a^2*b*(a*sin(f*x+e))
^(1/2)/f/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2598, 2589}

$$-\frac{8a^2b\sqrt{a\sin(e+fx)}}{5f\sqrt{b\tan(e+fx)}}-\frac{2b(a\sin(e+fx))^{5/2}}{5f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-8*a^2*b*Sqrt[a*Sin[e + f*x]])/(5*f*Sqrt[b*Tan[e + f*x]]) - (2*b*(a*Sin[e
+ f*x])^(5/2))/(5*f*Sqrt[b*Tan[e + f*x]])
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\int (a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}\,dx = -\frac{2b(a\sin(e+fx))^{5/2}}{5f\sqrt{b\tan(e+fx)}} + \frac{1}{5}\left(4a^2\right)\int \sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}\,dx$$
$$= -\frac{8a^2b\sqrt{a\sin(e+fx)}}{5f\sqrt{b\tan(e+fx)}} - \frac{2b(a\sin(e+fx))^{5/2}}{5f\sqrt{b\tan(e+fx)}}$$

Mathematica [A] time = 0.20, size = 51, normalized size = 0.75

$$-\frac{a^2\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}(\sin(2(e+fx))+8\cot(e+fx))}{5f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] -1/5*(a^2*Sqrt[a*Sin[e + f*x]]*(8*Cot[e + f*x] + Sin[2*(e + f*x)])*Sqrt[b*T
an[e + f*x]])/f
```

fricas [A] time = 0.43, size = 65, normalized size = 0.96

$$\frac{2\left(a^2\cos\left(fx+e\right)^3 - 5\,a^2\cos\left(fx+e\right)\right)\sqrt{a\sin\left(fx+e\right)}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}{5\,f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 2/5*(a^2*cos(f*x + e)^3 - 5*a^2*cos(f*x + e))*sqrt(a*sin(f*x + e))*sqrt(b*s
in(f*x + e)/cos(f*x + e))/(f*sin(f*x + e))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.64, size = 493, normalized size = 7.25

$$-\frac{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\left(5\cos\left(fx+e\right)\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}\,\ln\left(-\frac{2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}\left(\cos^{2}\left(fx+e\right)\right)-\left(\cos^{2}\left(fx+e\right)\right)-2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}+2}{\sin\left(fx+e\right)^{2}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/10/f*(a*sin(f*x+e))^(5/2)*(5*cos(f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(
1/2)*ln(-(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-
2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)-5*cos(
f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*ln(-2*(2*(-cos(f*x+e)/(1+cos(f*
x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(
1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)-4*cos(f*x+e)^3+5*ln(-(2*(-cos(f*x+e)/(1+
cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e)
)^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/
2)-5*ln(-2*(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^
2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)*(-co
s(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+20*cos(f*x+e))*(b*sin(f*x+e)/cos(f*x+e))^(
1/2)/sin(f*x+e)^3
```

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

$$\int\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\sqrt{b\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(5/2)*sqrt(b*tan(f*x + e)), x)
```

mupad [B] time = 4.33, size = 80, normalized size = 1.18

$$\frac{a^2\sqrt{a\,\sin\left(e+f\,x\right)}\,\left(18\,\sin\left(2\,e+2\,f\,x\right)-\sin\left(4\,e+4\,f\,x\right)\right)\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{10\,f\,\left(\cos\left(2\,e+2\,f\,x\right)-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(5/2)*(b*tan(e + f*x))^(1/2),x)
```

```
[Out] (a^2*(a*sin(e + f*x))^(1/2)*(18*sin(2*e + 2*f*x) - sin(4*e + 4*f*x))*((b*si
n(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(10*f*(cos(2*e + 2*f*x) - 1)
)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(5/2)*(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.115 $\int (a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}\,dx$

Optimal. Leaf size=88

$$\frac{4a^2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{3f\sqrt{a\sin(e+fx)}}-\frac{2b(a\sin(e+fx))^{3/2}}{3f\sqrt{b\tan(e+fx)}}$$

```
[Out] -2/3*b*(a*sin(f*x+e))^(3/2)/f/(b*tan(f*x+e))^(1/2)+4/3*a^2*(cos(1/2*e+1/2*f
*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticF(sin(1/2*e+1/2*f*x),2^(1/2))*cos(f
*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2598, 2601, 2641}

$$\frac{4a^2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{3f\sqrt{a\sin(e+fx)}}-\frac{2b(a\sin(e+fx))^{3/2}}{3f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-2*b*(a*Sin[e + f*x])^(3/2))/(3*f*Sqrt[b*Tan[e + f*x]]) + (4*a^2*Sqrt[Cos[
e + f*x]]*EllipticF[(e + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(3*f*Sqrt[a*Sin[e
 + f*x]])
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}\,dx = -\frac{2b(a\sin(e+fx))^{3/2}}{3f\sqrt{b\tan(e+fx)}}+\frac{1}{3}\left(2a^2\right)\int\frac{\sqrt{b\tan(e+fx)}}{\sqrt{a\sin(e+fx)}}\,dx$$

$$= -\frac{2b(a\sin(e+fx))^{3/2}}{3f\sqrt{b\tan(e+fx)}}+\frac{\left(2a^2\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int\frac{1}{\sqrt{\cos(e+fx)}}}{3\sqrt{a\sin(e+fx)}}$$

$$= -\frac{2b(a\sin(e+fx))^{3/2}}{3f\sqrt{b\tan(e+fx)}}+\frac{4a^2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+}}{3f\sqrt{a\sin(e+fx)}}$$

Mathematica [A] time = 0.32, size = 80, normalized size = 0.91

$$-\frac{2ab\sqrt{a\sin(e+fx)}\left(\sin(e+fx)\sqrt[4]{\cos^2(e+fx)}-2F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)\right)}{3f\sqrt[4]{\cos^2(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-2*a*b*Sqrt[a*Sin[e + f*x]]*(-2*EllipticF[ArcSin[Sin[e + f*x]]/2, 2] + (Co
s[e + f*x]^2)^(1/4)*Sin[e + f*x]))/(3*f*(Cos[e + f*x]^2)^(1/4)*Sqrt[b*Tan[e
 + f*x]])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,a\sin\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))*a*sin(f*x + e), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.52, size = 131, normalized size = 1.49

$$-\frac{2\left(2i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)+\cos^{2}\left(fx+e\right)-\cos\left(fx+e\right)\right)\left(a\sin\right.}{3f\left(-1+\cos\left(fx+e\right)\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -2/3/f*(2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Elli
pticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)+cos(f*x+e)^2-cos(f*x+e))*(
a*sin(f*x+e))^(3/2)*(b*sin(f*x+e)/cos(f*x+e))^(1/2)/(-1+cos(f*x+e))/sin(f*x
+e)
```

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

$$\int\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\sqrt{b\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(3/2)*sqrt(b*tan(f*x + e)), x)
```

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

$$\int{\left(a\,\sin\left(e+f\,x\right)\right)}^{3/2}\,\sqrt{b\,\tan\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^(1/2),x)
```

```
[Out] int((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(3/2)*(b*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.116 $\int \sqrt{a \sin(e+fx)} \sqrt{b \tan(e+fx)}\, dx$

Optimal. Leaf size=30

$$-\frac{2b\sqrt{a\sin(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

```
[Out] -2*b*(a*sin(f*x+e))^(1/2)/f/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2589}

$$-\frac{2b\sqrt{a\sin(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-2*b*Sqrt[a*Sin[e + f*x]])/(f*Sqrt[b*Tan[e + f*x]])
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rubi steps

$$\int \sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}\,dx = -\frac{2b\sqrt{a\sin(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

Mathematica [A] time = 0.13, size = 30, normalized size = 1.00

$$-\frac{2b\sqrt{a\sin(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-2*b*Sqrt[a*Sin[e + f*x]])/(f*Sqrt[b*Tan[e + f*x]])
```

fricas [A] time = 0.55, size = 47, normalized size = 1.57

$$-\frac{2\sqrt{a\sin\left(fx+e\right)}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)}{f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)/(f*s
in(f*x + e))
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x, algorithm="giac")
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[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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Done
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maple [B] time = 0.55, size = 295, normalized size = 9.83

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(4\cos\left(fx+e\right)\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}-\ln\left(-\frac{2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}\left(\cos^{2}\left(fx+e\right)\right)-\left(\cos^{2}\left(fx+e\right)\right)-2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}}{\sin\left(fx+e\right)^{2}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(-1+cos(f*x+e))*(4*cos(f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)-ln
(-(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos
(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)+ln(-2*(2*(-co
s(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(
1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)+4*(-cos(f*x+e)/(1+cos(
f*x+e))^2)^(1/2))*cos(f*x+e)*(a*sin(f*x+e))^(1/2)*(b*sin(f*x+e)/cos(f*x+e))
^(1/2)/sin(f*x+e)^3/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
```

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

$$\int\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e)), x)
```

mupad [B] time = 2.90, size = 60, normalized size = 2.00

$$\frac{\sin\left(2\,e+2\,f\,x\right)\,\sqrt{a\,\sin\left(e+f\,x\right)}\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{2\,{\cos\left(e+f\,x\right)}^2}}}{f\,\left({\cos\left(e+f\,x\right)}^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^(1/2),x)
```

```
[Out] (sin(2*e + 2*f*x)*(a*sin(e + f*x))^(1/2)*((b*sin(2*e + 2*f*x))/(2*cos(e + f
*x)^2))^(1/2))/(f*(cos(e + f*x)^2 - 1))
```

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

$$\int \sqrt{a \sin \left(e + f x\right)} \sqrt{b \tan \left(e + f x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(1/2)*(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*sin(e + f*x))*sqrt(b*tan(e + f*x)), x)
```

3.117 $\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{a\sin(e+fx)}}\,dx$

Optimal. Leaf size=50

$$\frac{2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{a\sin(e+fx)}}$$

```
[Out] 2*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticF(sin(1/2*e+1/2*f
*x),2^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2601, 2641}

$$\frac{2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/Sqrt[a*Sin[e + f*x]],x]
```

```
[Out] (2*Sqrt[Cos[e + f*x]]*EllipticF[(e + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(f*Sq
rt[a*Sin[e + f*x]])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{a\sin(e+fx)}}\,dx = \frac{\left(\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}\right)\int \frac{1}{\sqrt{\cos(e+fx)}}\,dx}{\sqrt{a\sin(e+fx)}}$$
$$= \frac{2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{a\sin(e+fx)}}$$

Mathematica [A] time = 0.12, size = 60, normalized size = 1.20

$$\frac{2\cos(e+fx)\sqrt{b\tan(e+fx)}\,F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)}{f\sqrt[4]{\cos^2(e+fx)}\,\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/Sqrt[a*Sin[e + f*x]],x]
```

```
[Out] (2*Cos[e + f*x]*EllipticF[ArcSin[Sin[e + f*x]]/2, 2]*Sqrt[b*Tan[e + f*x]])/
(f*(Cos[e + f*x]^2)^(1/4)*Sqrt[a*Sin[e + f*x]])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{a\sin\left(fx+e\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))/(a*sin(f*x + e)), x)
```

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

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\sqrt{a\sin\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/sqrt(a*sin(f*x + e)), x)
```

maple [C] time = 0.43, size = 88, normalized size = 1.76

$$\frac{2 i \,\mathrm{EllipticF}\left(\frac{i \left(-1+\cos \left(f x +e \right)\right)}{\sin \left(f x +e \right)}, i\right) \sqrt{\frac{\cos \left(f x +e \right)}{1+\cos \left(f x +e \right)}}\, \sqrt{\frac{b \sin \left(f x +e \right)}{\cos \left(f x +e \right)}}}{f \sqrt{a \sin \left(f x +e \right)}\, \sqrt{\frac{1}{1+\cos \left(f x +e \right)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(1/2),x)
```

```
[Out] 2*I/f/(a*sin(f*x+e))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)/(1/(1+cos(f*x+e)))^(1/2)*(b*sin(f*x+e)/cos(f*x+
e))^(1/2)
```

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

$$\int \frac{\sqrt{b \tan \left(f x + e\right)}}{\sqrt{a \sin \left(f x + e\right)}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/sqrt(a*sin(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{b\,\mathrm{tan}\left(e+f\,x\right)}}{\sqrt{a\,\sin\left(e+f\,x\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(a*sin(e + f*x))^(1/2),x)
```

```
[Out] int((b*tan(e + f*x))^(1/2)/(a*sin(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{b \tan{\left(e + f x \right)}}}{\sqrt{a \sin{\left(e + f x \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(a*sin(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(b*tan(e + f*x))/sqrt(a*sin(e + f*x)), x)
```

3.118 $\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{a\sin(e+fx)}}-\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{a\sin(e+fx)}}$$

```
[Out] -arctan(cos(f*x+e)^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/a/f/(a*sin(
f*x+e))^(1/2)-arctanh(cos(f*x+e)^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/
2)/a/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2601, 12, 2565, 329, 212, 206, 203}

$$-\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{a\sin(e+fx)}}-\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/(a*Sin[e + f*x])^(3/2),x]
```

```
[Out] -((ArcTan[Sqrt[Cos[e + f*x]]]*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/(a*f
*Sqrt[a*Sin[e + f*x]])) - (ArcTanh[Sqrt[Cos[e + f*x]]]*Sqrt[Cos[e + f*x]]*S
qrt[b*Tan[e + f*x]])/(a*f*Sqrt[a*Sin[e + f*x]])
```

Rule 12

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

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2565

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_.)*sin[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> -Dist[(a*f)^(-1), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x
, a*Cos[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&
!(IntegerQ[(m - 1)/2] && GtQ[m, 0] && LeQ[m, n])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{3/2}}\,dx = \frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int \frac{\csc(e+fx)}{a\sqrt{\cos(e+fx)}}\,dx}{\sqrt{a\sin(e+fx)}}$$

$$= \frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int \frac{\csc(e+fx)}{\sqrt{\cos(e+fx)}}\,dx}{a\sqrt{a\sin(e+fx)}}$$

$$= -\frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{\sqrt{x}(1-x^2)}\,dx, x, \cos(e+fx)\right)}{af\sqrt{a\sin(e+fx)}}$$

$$= -\frac{\left(2\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{1-x^4}\,dx, x, \sqrt{\cos(e+fx)}\right)}{af\sqrt{a\sin(e+fx)}}$$

$$= -\frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{\cos(e+fx)}\right)}{af\sqrt{a\sin(e+fx)}} - \frac{\left(\sqrt{\cos(e+f\right.}{}$$

$$= -\frac{\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}{af\sqrt{a\sin(e+fx)}} - \frac{\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{\mathrm{co}}}{af\sqrt{a\sin(}}$$

Mathematica [A] time = 0.26, size = 72, normalized size = 0.67

$$-\frac{b\sqrt{a\sin(e+fx)}\left(\tan^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)+\tanh^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)\right)}{a^2f\sqrt[4]{\cos^2(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/(a*Sin[e + f*x])^(3/2),x]
```

```
[Out] -((b*(ArcTan[(Cos[e + f*x]^2)^(1/4)] + ArcTanh[(Cos[e + f*x]^2)^(1/4)])*Sqr
t[a*Sin[e + f*x]])/(a^2*f*(Cos[e + f*x]^2)^(1/4)*Sqrt[b*Tan[e + f*x]]))
```

fricas [B] time = 0.80, size = 413, normalized size = 3.86

$$\left[\frac{2\sqrt{-\frac{b}{a}}\arctan\left(\frac{2\sqrt{a\sin(fx+e)}\sqrt{\frac{b\sin(fx+e)}{\cos(fx+e)}}\sqrt{-\frac{b}{a}}\cos(fx+e)}{(b\cos(fx+e)+b)\sin(fx+e)}\right)+\sqrt{-\frac{b}{a}}\log\left(-\frac{b\cos(fx+e)^3+4\sqrt{a\sin(fx+e)}\sqrt{\frac{b\sin(fx+e)}{\cos(fx+e)}}\sqrt{-\frac{b}{a}}\cos(f}{\cos(fx+e)^3+3\cos(fx+e)^2}\right.}{4af}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(2*sqrt(-b/a)*arctan(2*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*
x + e))*sqrt(-b/a)*cos(f*x + e)/((b*cos(f*x + e) + b)*sin(f*x + e))) + sqrt
(-b/a)*log(-(b*cos(f*x + e)^3 + 4*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/
cos(f*x + e))*sqrt(-b/a)*cos(f*x + e)*sin(f*x + e) - 5*b*cos(f*x + e)^2 - 5
*b*cos(f*x + e) + b)/(cos(f*x + e)^3 + 3*cos(f*x + e)^2 + 3*cos(f*x + e) +
1)))/(a*f), 1/4*(2*sqrt(b/a)*arctan(2*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x +
 e)/cos(f*x + e))*sqrt(b/a)*cos(f*x + e)/((b*cos(f*x + e) - b)*sin(f*x + e)
)) + sqrt(b/a)*log((4*(cos(f*x + e)^2 + cos(f*x + e))*sqrt(a*sin(f*x + e))*
sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(b/a) - (b*cos(f*x + e)^2 + 6*b*cos(f
*x + e) + b)*sin(f*x + e))/((cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sin(f*x +
 e))))/(a*f)]
```

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

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(a*sin(f*x + e))^(3/2), x)
```

maple [B] time = 0.51, size = 185, normalized size = 1.73

$$-\frac{\left(\arctan\left(\frac{1}{2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}}\right)-\ln\left(-\frac{2\left(2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}\,\left(\cos^2(fx+e)\right)-\left(\cos^2(fx+e)\right)-2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}+2\cos(fx+e)-1\right)}{\sin(fx+e)^2}\right)\right)(-1+ \cdots}{2f\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\sin\left(fx+e\right)\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(3/2),x)
```

```
[Out] -1/2/f*(arctan(1/2/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2))-ln(-2*(2*(-cos(f*x
+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos
(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2))*(-1+cos(f*x+e))*cos(f*x+e)
```

```
*(b*sin(f*x+e)/cos(f*x+e))^(1/2)/(a*sin(f*x+e))^(3/2)/sin(f*x+e)/(-cos(f*x+
e)/(1+cos(f*x+e))^2)^(1/2)
```

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

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*tan(f*x + e))/(a*sin(f*x + e))^(3/2), x)
```

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

$$\int \frac{\sqrt{b\tan\left(e+f\,x\right)}}{{\left(a\,\sin\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(a*sin(e + f*x))^(3/2),x)
[Out] int((b*tan(e + f*x))^(1/2)/(a*sin(e + f*x))^(3/2), x)
```

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

$$\int \frac{\sqrt{b\tan\left(e+fx\right)}}{\left(a\sin\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(a*sin(f*x+e))**(3/2),x)
[Out] Integral(sqrt(b*tan(e + f*x))/(a*sin(e + f*x))**(3/2), x)
```

3.119 $\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=86

$$\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}}-\frac{b}{a^2f\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

```
[Out] -b/a^2/f/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2)+(cos(1/2*e+1/2*f*x)^2)^(
1/2)/cos(1/2*e+1/2*f*x)*EllipticF(sin(1/2*e+1/2*f*x),2^(1/2))*cos(f*x+e)^(1
/2)*(b*tan(f*x+e))^(1/2)/a^2/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2599, 2601, 2641}

$$\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}}-\frac{b}{a^2f\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/(a*Sin[e + f*x])^(5/2),x]
```

```
[Out] -(b/(a^2*f*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]])) + (Sqrt[Cos[e + f*x]
]*EllipticF[(e + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(a^2*f*Sqrt[a*Sin[e + f*x
]])
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{5/2}}\,dx &= -\frac{b}{a^2f\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}+\frac{\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{a\sin(e+fx)}}\,dx}{2a^2}\\ &= -\frac{b}{a^2f\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}+\frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int \frac{1}{\sqrt{\cos(e+fx)}}\,d}{2a^2\sqrt{a\sin(e+fx)}}\\ &= -\frac{b}{a^2f\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}+\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}}\end{aligned}$$

Mathematica [A] time = 0.25, size = 79, normalized size = 0.92

$$\frac{b\left(\sin(e+fx)F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)-\sqrt[4]{\cos^2(e+fx)}\right)}{a^2f\sqrt[4]{\cos^2(e+fx)}\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/(a*Sin[e + f*x])^(5/2),x]
```

```
[Out] (b*(-(Cos[e + f*x]^2)^(1/4) + EllipticF[ArcSin[Sin[e + f*x]]/2, 2]*Sin[e +
f*x]))/(a^2*f*(Cos[e + f*x]^2)^(1/4)*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*
x]])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{\left(a^3\cos\left(fx+e\right)^2-a^3\right)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))/((a^3*cos(f*x + e)^2 -
a^3)*sin(f*x + e)), x)
```

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

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(a*sin(f*x + e))^(5/2), x)
```

maple [C] time = 0.51, size = 178, normalized size = 2.07

$$\frac{\left(i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \mathrm{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)+i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\right.}{f\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(5/2),x)
```

```
[Out] 1/f*(I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF
(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)+I*(1/(1+cos(f*x+e)))
^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*
x+e),I)*sin(f*x+e)-cos(f*x+e))*(b*sin(f*x+e)/cos(f*x+e))^(1/2)*sin(f*x+e)/(
a*sin(f*x+e))^(5/2)
```

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

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(a*sin(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(a*sin(f*x + e))^(5/2), x)
```

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

$$\int \frac{\sqrt{b\tan\left(e+f\,x\right)}}{{\left(a\,\sin\left(e+f\,x\right)\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(a*sin(e + f*x))^(5/2),x)
```

```
[Out] int((b*tan(e + f*x))^(1/2)/(a*sin(e + f*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(a*sin(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.120 $\int (a \sin(e + fx))^{5/2}(b \tan(e + fx))^{3/2}\,dx$

Optimal. Leaf size=126

$$-\frac{24a^2b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{5f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}+\frac{12a^2b\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}{5f}-\frac{2b(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+f}}{5f}$$

```
[Out] -24/5*a^2*b^2*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticE(sin
(1/2*e+1/2*f*x),2^(1/2))*(a*sin(f*x+e))^(1/2)/f/cos(f*x+e)^(1/2)/(b*tan(f*x
+e))^(1/2)-2/5*b*(a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2)/f+12/5*a^2*b*(a*
sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.17, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2598, 2594, 2601, 2639}

$$-\frac{24a^2b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{5f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}+\frac{12a^2b\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}{5f}-\frac{2b(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+f}}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-24*a^2*b^2*EllipticE[(e + f*x)/2, 2]*Sqrt[a*Sin[e + f*x]])/(5*f*Sqrt[Cos[
e + f*x]]*Sqrt[b*Tan[e + f*x]]) + (12*a^2*b*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan
[e + f*x]])/(5*f) - (2*b*(a*Sin[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]])/(5*f)
```

Rule 2594

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
n - 1)), x] - Dist[(b^2*(m + n - 1))/(n - 1), Int[(a*Sin[e + f*x])^m*(b*Tan
[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] && Int
egersQ[2*m, 2*n] &&  !(GtQ[m, 1] &&  !IntegerQ[(m - 1)/2])
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int (a\sin(e+fx))^{5/2}(b\tan(e+fx))^{3/2}\,dx = -\frac{2b(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}{5f}+\frac{1}{5}\left(6a^2\right)\int \sqrt{a\sin(e+fx)}\,(b$$

$$=\frac{12a^2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{5f}-\frac{2b(a\sin(e+fx))^{5/2}\sqrt{b\tan(e}}{5f}$$

$$=\frac{12a^2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{5f}-\frac{2b(a\sin(e+fx))^{5/2}\sqrt{b\tan(e}}{5f}$$

$$=-\frac{24a^2b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{5f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}+\frac{12a^2b\sqrt{a\sin(e+fx)}\,\sqrt{b\,t}}{5f}$$

Mathematica [C] time = 0.33, size = 99, normalized size = 0.79

$$\frac{a^2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}\,\left(\cos^2(e+fx)^{3/4}(\cos(2(e+fx))+11)-12\cos^2(e+fx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};\sin^2(e+\right.\right.}{5f\cos^2(e+fx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (a^2*b*((Cos[e + f*x]^2)^(3/4)*(11 + Cos[2*(e + f*x)]) - 12*Cos[e + f*x]^2*
Hypergeometric2F1[1/4, 1/2, 3/2, Sin[e + f*x]^2])*Sqrt[a*Sin[e + f*x]]*Sqrt
[b*Tan[e + f*x]])/(5*f*(Cos[e + f*x]^2)^(3/4))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2b\cos\left(fx+e\right)^2-a^2b\right)\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}\,\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(a^2*b*cos(f*x + e)^2 - a^2*b)*sqrt(a*sin(f*x + e))*sqrt(b*tan(f*
x + e))*tan(f*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
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```

maple [C] time = 0.54, size = 338, normalized size = 2.68

$$\frac{2\left(12i\sin\left(fx+e\right)\cos\left(fx+e\right)\sqrt{\frac{1}{1+\cos(fx+e)}}\,\sqrt{\frac{\cos(fx+e)}{1+\cos(fx+e)}}\,\operatorname{EllipticE}\left(\frac{i(-1+\cos(fx+e))}{\sin(fx+e)},i\right)-12i\sqrt{\frac{1}{1+\cos(fx+e)}}\,\sqrt{\frac{\cos}{1+\cos}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 2/5/f*(12*I*sin(f*x+e)*cos(f*x+e)*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)-12*I*(1/(1+cos(
f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e)
)/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)+12*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*
x+e)-12*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ellipt
icF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)-cos(f*x+e)^4+8*cos(f*x+e)^2-
12*cos(f*x+e)+5)*(a*sin(f*x+e))^(5/2)*(b*sin(f*x+e)/cos(f*x+e))^(3/2)*cos(f
*x+e)/sin(f*x+e)^5
```

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

$$\int\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(5/2)*(b*tan(f*x + e))^(3/2), x)
```

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

$$\int\left(a\,\sin\left(e+f\,x\right)\right)^{5/2}\left(b\tan\left(e+f\,x\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(5/2)*(b*tan(e + f*x))^(3/2),x)
```

```
[Out] int((a*sin(e + f*x))^(5/2)*(b*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(5/2)*(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.121 $\int (a\sin(e+fx))^{3/2}(b\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=68

$$\frac{8a^2b\sqrt{b\tan(e+fx)}}{3f\sqrt{a\sin(e+fx)}}-\frac{2b(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{3f}$$

```
[Out] -2/3*b*(a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2)/f+8/3*a^2*b*(b*tan(f*x+e))
^(1/2)/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2598, 2589}

$$\frac{8a^2b\sqrt{b\tan(e+fx)}}{3f\sqrt{a\sin(e+fx)}}-\frac{2b(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (8*a^2*b*Sqrt[b*Tan[e + f*x]])/(3*f*Sqrt[a*Sin[e + f*x]]) - (2*b*(a*Sin[e +
 f*x])^(3/2)*Sqrt[b*Tan[e + f*x]])/(3*f)
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\int (a\sin(e+fx))^{3/2}(b\tan(e+fx))^{3/2}\,dx = -\frac{2b(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{3f} + \frac{1}{3}\left(4a^2\right)\int \frac{(b\tan(e+fx))^{3/2}}{\sqrt{a\sin(e+fx)}}$$
$$= \frac{8a^2b\sqrt{b\tan(e+fx)}}{3f\sqrt{a\sin(e+fx)}} - \frac{2b(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{3f}$$

Mathematica [A] time = 0.17, size = 45, normalized size = 0.66

$$\frac{a^2b(\cos(2(e+fx))+7)\sqrt{b\tan(e+fx)}}{3f\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (a^2*b*(7 + Cos[2*(e + f*x)])*Sqrt[b*Tan[e + f*x]])/(3*f*Sqrt[a*Sin[e + f*x
]])
```

fricas [A] time = 0.42, size = 57, normalized size = 0.84

$$\frac{2\left(ab\cos\left(fx+e\right)^2+3\,ab\right)\sqrt{a\sin\left(fx+e\right)}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}{3\,f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(a*b*cos(f*x + e)^2 + 3*a*b)*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/c
os(f*x + e))/(f*sin(f*x + e))
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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maple [B] time = 0.50, size = 492, normalized size = 7.24

$$\left(-3\cos\left(fx+e\right)\sqrt{-\frac{\cos(fx+e)}{\left(1+\cos(fx+e)\right)^2}}\ \ln\left(-\frac{2\left(2\sqrt{-\frac{\cos(fx+e)}{\left(1+\cos(fx+e)\right)^2}}\left(\cos^2(fx+e)\right)-\left(\cos^2(fx+e)\right)-2\sqrt{-\frac{\cos(fx+e)}{\left(1+\cos(fx+e)\right)^2}}+2\cos(fx+e)-1\right)}{\sin(fx+e)^2}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/6/f*(-3*cos(f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*ln(-2*(2*(-cos(f*
x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+co
s(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)+3*cos(f*x+e)*(-cos(f*x+e)/
(1+cos(f*x+e))^2)^(1/2)*ln(-(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x
+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/s
in(f*x+e)^2)+4*cos(f*x+e)^2-3*ln(-2*(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x
+e)-1)/sin(f*x+e)^2)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+3*ln(-(2*(-cos(f*
x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+co
s(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)*(-cos(f*x+e)/(1+cos(f*x+e)
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```
)^2)^(1/2)+12)*cos(f*x+e)*(a*sin(f*x+e))^(3/2)*(b*sin(f*x+e)/cos(f*x+e))^(3
/2)/sin(f*x+e)^3
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^(3/2)*(b*tan(f*x + e))^(3/2), x)
```

mupad [B] time = 3.73, size = 69, normalized size = 1.01

$$\frac{a\,b\,\left(13\,\sin\left(e+f\,x\right)+\sin\left(3\,e+3\,f\,x\right)\right)\,\sqrt{a\,\sin\left(e+f\,x\right)}\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{6\,f\,\sin\left(e+f\,x\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^(3/2),x)
[Out] (a*b*(13*sin(e + f*x) + sin(3*e + 3*f*x))*(a*sin(e + f*x))^(1/2)*((b*sin(2*
e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(6*f*sin(e + f*x)^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(3/2)*(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.122 $\int \sqrt{a \sin(e+fx)} (b \tan(e+fx))^{3/2} \, dx$

Optimal. Leaf size=84

$$\frac{2b\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}{f}-\frac{4b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

```
[Out] -4*b^2*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticE(sin(1/2*e+
1/2*f*x),2^(1/2))*(a*sin(f*x+e))^(1/2)/f/cos(f*x+e)^(1/2)/(b*tan(f*x+e))^(1
/2)+2*b*(a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.10, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2594, 2601, 2639}

$$\frac{2b\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}{f}-\frac{4b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-4*b^2*EllipticE[(e + f*x)/2, 2]*Sqrt[a*Sin[e + f*x]])/(f*Sqrt[Cos[e + f*x
]]*Sqrt[b*Tan[e + f*x]]) + (2*b*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]])/
f
```

Rule 2594

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
n - 1)), x] - Dist[(b^2*(m + n - 1))/(n - 1), Int[(a*Sin[e + f*x])^m*(b*Tan
[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] && Int
egersQ[2*m, 2*n] &&  !(GtQ[m, 1] &&  !IntegerQ[(m - 1)/2])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}\,dx = \frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{f} - \left(2b^2\right)\int \frac{\sqrt{a\sin(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx$$

$$= \frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{f} - \frac{\left(2b^2\sqrt{a\sin(e+fx)}\right)\int \sqrt{\cos(e+f}}{\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

$$= -\frac{4b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}} + \frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+f}}{f}$$

Mathematica [C] time = 0.21, size = 83, normalized size = 0.99

$$\frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}\left(\cos^2(e+fx)^{3/4}-\cos^2(e+fx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)\right)}{f\cos^2(e+fx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*b*((Cos[e + f*x]^2)^(3/4) - Cos[e + f*x]^2*Hypergeometric2F1[1/4, 1/2, 3
/2, Sin[e + f*x]^2])*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]])/(f*(Cos[e +
 f*x]^2)^(3/4))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}\,b\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))*b*tan(f*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign
: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable
to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*p
i/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*
pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to ch
eck sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2
)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/
2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check s
ign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unab
le to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-
2*pi/x/2)Evaluation time: 2.52Done
```

maple [C] time = 0.52, size = 326, normalized size = 3.88

$$\frac{2\left(-2i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)+2i\sin\left(fx+e\right)\cos\left(fx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 2/f*(-2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ellipt
icF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)+2*I*cos(f*x+e)*si
n(f*x+e)*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ellipti
cE(I*(-1+cos(f*x+e))/sin(f*x+e),I)-2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)
/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)
+2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticE(I
*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)+cos(f*x+e)^2-2*cos(f*x+e)+1)*(a*s
in(f*x+e))^(1/2)*(b*sin(f*x+e)/cos(f*x+e))^(3/2)*cos(f*x+e)/sin(f*x+e)^3
```

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

$$\int \sqrt{a\sin\left(fx+e\right)}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^(3/2), x)
```

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

$$\int \sqrt{a\,\sin\left(e+f\,x\right)}\,\left(b\tan\left(e+f\,x\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^(3/2),x)
[Out] int((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(1/2)*(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.123 $\int \frac{(b\tan(e+fx))^{3/2}}{\sqrt{a\sin(e+fx)}}\,dx$

Optimal. Leaf size=30

$$\frac{2b\sqrt{b\tan(e+fx)}}{f\sqrt{a\sin(e+fx)}}$$

```
[Out] 2*b*(b*tan(f*x+e))^(1/2)/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2589}

$$\frac{2b\sqrt{b\tan(e+fx)}}{f\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/Sqrt[a*Sin[e + f*x]],x]
```

```
[Out] (2*b*Sqrt[b*Tan[e + f*x]])/(f*Sqrt[a*Sin[e + f*x]])
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{3/2}}{\sqrt{a\sin(e+fx)}}\,dx = \frac{2b\sqrt{b\tan(e+fx)}}{f\sqrt{a\sin(e+fx)}}$$

Mathematica [A] time = 0.07, size = 30, normalized size = 1.00

$$\frac{2b\sqrt{b\tan(e+fx)}}{f\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/Sqrt[a*Sin[e + f*x]],x]
```

```
[Out] (2*b*Sqrt[b*Tan[e + f*x]])/(f*Sqrt[a*Sin[e + f*x]])
```

fricas [A] time = 0.74, size = 45, normalized size = 1.50

$$\frac{2\sqrt{a\sin\left(fx+e\right)}\,b\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}{af\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(a*sin(f*x + e))*b*sqrt(b*sin(f*x + e)/cos(f*x + e))/(a*f*sin(f*x + e
))
```

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

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\sqrt{a\sin\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/sqrt(a*sin(f*x + e)), x)
```

maple [B] time = 0.53, size = 308, normalized size = 10.27

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(\cos\left(fx+e\right)\ln\left(-\frac{2\left(2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}\left(\cos^{2}\left(fx+e\right)\right)-\left(\cos^{2}\left(fx+e\right)\right)-2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}+2\cos\left(fx+e\right)-1\right)}{\sin\left(fx+e\right)^{2}}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(1/2),x)
```

```
[Out] -1/2/f*(-1+cos(f*x+e))*(cos(f*x+e)*ln(-2*(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^
(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*co
s(f*x+e)-1)/sin(f*x+e)^2)-cos(f*x+e)*ln(-(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^
(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*co
s(f*x+e)-1)/sin(f*x+e)^2)+4*cos(f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
+4*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2))*cos(f*x+e)*(b*sin(f*x+e)/cos(f*x+e
```

```
))^(3/2)/(a*sin(f*x+e))^(1/2)/sin(f*x+e)^3/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(
1/2)
```

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

$$\int \frac{(b\tan(fx+e))^{\frac{3}{2}}}{\sqrt{a\sin(fx+e)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/sqrt(a*sin(f*x + e)), x)
```

mupad [B] time = 3.07, size = 39, normalized size = 1.30

$$\frac{2\,b\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{2\,\cos\left(e+f\,x\right)^2}}}{f\,\sqrt{a\,\sin\left(e+f\,x\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(a*sin(e + f*x))^(1/2),x)
```

```
[Out] (2*b*((b*sin(2*e + 2*f*x))/(2*cos(e + f*x)^2))^(1/2))/(f*(a*sin(e + f*x))^(
1/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(a*sin(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.124 $\int \frac{(b\tan(e+fx))^{3/2}}{(a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=90

$$\frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{a^2f}-\frac{2b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{a^2f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

```
[Out] -2*b^2*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticE(sin(1/2*e+
1/2*f*x),2^(1/2))*(a*sin(f*x+e))^(1/2)/a^2/f/cos(f*x+e)^(1/2)/(b*tan(f*x+e)
)^(1/2)+2*b*(a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2)/a^2/f
```

Rubi [A] time = 0.11, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2593, 2601, 2639}

$$\frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{a^2f}-\frac{2b^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{a^2f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/(a*Sin[e + f*x])^(3/2),x]
```

```
[Out] (-2*b^2*EllipticE[(e + f*x)/2, 2]*Sqrt[a*Sin[e + f*x]])/(a^2*f*Sqrt[Cos[e +
 f*x]]*Sqrt[b*Tan[e + f*x]]) + (2*b*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x
]])/(a^2*f)
```

Rule 2593

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1))
/(a^2*f*(n - 1)), x] - Dist[(b^2*(m + 2))/(a^2*(n - 1)), Int[(a*Sin[e + f*x
])^(m + 2)*(b*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && Gt
Q[n, 1] && (LtQ[m, -1] || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*
n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{3/2}}{(a\sin(e+fx))^{3/2}}\,dx = \frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{a^2 f} - \frac{b^2\int \frac{\sqrt{a\sin(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx}{a^2}$$

$$= \frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{a^2 f} - \frac{\left(b^2\sqrt{a\sin(e+fx)}\right)\int \sqrt{\cos(e+fx)}\,dx}{a^2\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

$$= -\frac{2b^2 E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{a^2 f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}} + \frac{2b\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}{a^2 f}$$

Mathematica [C] time = 0.27, size = 92, normalized size = 1.02

$$\frac{(b\tan(e+fx))^{3/2}\left(2\cos(e+fx)\cos^2(e+fx)^{3/4} - \cos^3(e+fx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)\right)}{af\cos^2(e+fx)^{3/4}\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/(a*Sin[e + f*x])^(3/2),x]
```

```
[Out] ((2*Cos[e + f*x]*(Cos[e + f*x]^2)^(3/4) - Cos[e + f*x]^3*Hypergeometric2F1[
1/4, 1/2, 3/2, Sin[e + f*x]^2])*(b*Tan[e + f*x])^(3/2))/(a*f*(Cos[e + f*x]^
2)^(3/4)*Sqrt[a*Sin[e + f*x]])
```

fricas [F] time = 1.31, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}\,b\tan\left(fx+e\right)}{a^2\cos\left(fx+e\right)^2 - a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))*b*tan(f*x + e)/(a^2*cos
(f*x + e)^2 - a^2), x)
```

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

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(3/2),x, algorithm="giac")
[Out] integrate((b*tan(f*x + e))^(3/2)/(a*sin(f*x + e))^(3/2), x)
```

maple [C] time = 0.47, size = 316, normalized size = 3.51

$$-\frac{2\left(i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \mathrm{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)-i\sin\left(fx+e\right)\cos\left(fx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(3/2),x)
[Out] -2/f*(I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Elliptic
F(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)-I*cos(f*x+e)*sin(f*
x+e)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(1/(1+cos(f*x+e)))^(1/2)*(co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)+I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)-I*sin
(f*x+e)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(1/(1+cos(f*x+e)))^(1/2)*
(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+cos(f*x+e)-1)*cos(f*x+e)*(b*sin(f*x+e)/co
s(f*x+e))^(3/2)/(a*sin(f*x+e))^(3/2)/sin(f*x+e)
```

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

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^(3/2)/(a*sin(f*x + e))^(3/2), x)
```

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

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}{\left(a\,\sin\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(a*sin(e + f*x))^(3/2),x)
[Out] int((b*tan(e + f*x))^(3/2)/(a*sin(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(a*sin(f*x+e))**(3/2),x)
[Out] Timed out
```

3.125 $\int \frac{(b\tan(e+fx))^{3/2}}{(a\sin(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=145

$$\frac{b^2\sqrt{a\sin(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{a^3f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}-\frac{b^2\sqrt{a\sin(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{a^3f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}+\frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}}$$

```
[Out] b^2*arctan(cos(f*x+e)^(1/2))*(a*sin(f*x+e))^(1/2)/a^3/f/cos(f*x+e)^(1/2)/(b
*tan(f*x+e))^(1/2)-b^2*arctanh(cos(f*x+e)^(1/2))*(a*sin(f*x+e))^(1/2)/a^3/f
/cos(f*x+e)^(1/2)/(b*tan(f*x+e))^(1/2)+2*b*(b*tan(f*x+e))^(1/2)/a^2/f/(a*si
n(f*x+e))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {2593, 2601, 12, 2565, 329, 298, 203, 206}

$$\frac{b^2\sqrt{a\sin(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{a^3f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}-\frac{b^2\sqrt{a\sin(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{a^3f\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}+\frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/(a*Sin[e + f*x])^(5/2),x]
```

```
[Out] (b^2*ArcTan[Sqrt[Cos[e + f*x]]]*Sqrt[a*Sin[e + f*x]])/(a^3*f*Sqrt[Cos[e + f
*x]]*Sqrt[b*Tan[e + f*x]]) - (b^2*ArcTanh[Sqrt[Cos[e + f*x]]]*Sqrt[a*Sin[e
+ f*x]])/(a^3*f*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]) + (2*b*Sqrt[b*Tan[
e + f*x]])/(a^2*f*Sqrt[a*Sin[e + f*x]])
```

Rule 12

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

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2565

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_.)*sin[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> -Dist[(a*f)^(-1), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x
, a*Cos[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&
!(IntegerQ[(m - 1)/2] && GtQ[m, 0] && LeQ[m, n])
```

Rule 2593

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1))
/(a^2*f*(n - 1)), x] - Dist[(b^2*(m + 2))/(a^2*(n - 1)), Int[(a*Sin[e + f*x
])^(m + 2)*(b*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && Gt
Q[n, 1] && (LtQ[m, -1] || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*
n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{3/2}}{(a\sin(e+fx))^{5/2}}\,dx = \frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}} + \frac{b^2\int \frac{1}{\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}\,dx}{a^2}$$

$$= \frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}} + \frac{\left(b^2\sqrt{a\sin(e+fx)}\right)\int \frac{\sqrt{\cos(e+fx)}\csc(e+fx)}{a}\,dx}{a^2\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

$$= \frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}} + \frac{\left(b^2\sqrt{a\sin(e+fx)}\right)\int \sqrt{\cos(e+fx)}\csc(e+fx)\,dx}{a^3\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

$$= \frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}} - \frac{\left(b^2\sqrt{a\sin(e+fx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{1-x^2}\,dx, x, \cos(e+fx)\right)}{a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

$$= \frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}} - \frac{\left(2b^2\sqrt{a\sin(e+fx)}\right)\text{Subst}\left(\int \frac{x^2}{1-x^4}\,dx, x, \sqrt{\cos(e+fx)}\right)}{a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

$$= \frac{2b\sqrt{b\tan(e+fx)}}{a^2f\sqrt{a\sin(e+fx)}} - \frac{\left(b^2\sqrt{a\sin(e+fx)}\right)\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{\cos(e+fx)}\right)}{a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}} + \frac{\left(b^2\sqrt{\right.}{}$$

$$= \frac{b^2\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{a\sin(e+fx)}}{a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{b^2\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{a\sin(e+fx)}}{a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

Mathematica [A] time = 0.36, size = 104, normalized size = 0.72

$$\frac{b\sqrt{b\tan(e+fx)}\left(2\cos^2(e+fx)^{3/4}+\cos^2(e+fx)\tan^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)-\cos^2(e+fx)\tanh^{-1}\left(\sqrt[4]{\cos^2(e+fx\right.}\right.}{a^2f\cos^2(e+fx)^{3/4}\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/(a*Sin[e + f*x])^(5/2),x]
```

```
[Out] (b*(ArcTan[(Cos[e + f*x]^2)^(1/4)]*Cos[e + f*x]^2 - ArcTanh[(Cos[e + f*x]^2
)^(1/4)]*Cos[e + f*x]^2 + 2*(Cos[e + f*x]^2)^(3/4))*Sqrt[b*Tan[e + f*x]])/(
a^2*f*(Cos[e + f*x]^2)^(3/4)*Sqrt[a*Sin[e + f*x]])
```

fricas [B] time = 1.29, size = 524, normalized size = 3.61

$$\left[\frac{2\,ab\sqrt{-\frac{b}{a}}\,\arctan\left(\frac{2\,\sqrt{a\sin\left(fx+e\right)}\,\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{-\frac{b}{a}}\,\cos\left(fx+e\right)}{\left(b\cos\left(fx+e\right)+b\right)\sin\left(fx+e\right)}\right)\sin\left(fx+e\right)+ab\sqrt{-\frac{b}{a}}\,\log\left(-\frac{b\cos\left(fx+e\right)^{3}-4\,\sqrt{a\sin\left(fx+e\right)}\,\sqrt{\frac{b\sin}{\cos}}\cdots}{\cos\left(f\cdots\right.}\right.}{4\,a^{3}f\sin\left(fx+\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [1/4*(2*a*b*sqrt(-b/a)*arctan(2*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/co
s(f*x + e))*sqrt(-b/a)*cos(f*x + e)/((b*cos(f*x + e) + b)*sin(f*x + e)))*si
n(f*x + e) + a*b*sqrt(-b/a)*log(-(b*cos(f*x + e)^3 - 4*sqrt(a*sin(f*x + e))
*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(-b/a)*cos(f*x + e)*sin(f*x + e) - 5
*b*cos(f*x + e)^2 - 5*b*cos(f*x + e) + b)/(cos(f*x + e)^3 + 3*cos(f*x + e)^
2 + 3*cos(f*x + e) + 1))*sin(f*x + e) + 8*sqrt(a*sin(f*x + e))*b*sqrt(b*sin
(f*x + e)/cos(f*x + e)))/(a^3*f*sin(f*x + e)), -1/4*(2*a*b*sqrt(b/a)*arctan
(2*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(b/a)*cos(f*x
 + e)/((b*cos(f*x + e) - b)*sin(f*x + e)))*sin(f*x + e) - a*b*sqrt(b/a)*log
((4*(cos(f*x + e)^2 + cos(f*x + e))*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e
)/cos(f*x + e))*sqrt(b/a) - (b*cos(f*x + e)^2 + 6*b*cos(f*x + e) + b)*sin(f
*x + e))/((cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sin(f*x + e)))*sin(f*x + e)
 - 8*sqrt(a*sin(f*x + e))*b*sqrt(b*sin(f*x + e)/cos(f*x + e)))/(a^3*f*sin(f
*x + e))]
```

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

$$\int\frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(a*sin(f*x + e))^(5/2), x)
```

maple [A] time = 0.51, size = 247, normalized size = 1.70

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(\cos\left(fx+e\right)\ln\left(-\frac{2\left(2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}\left(\cos^{2}\left(fx+e\right)\right)-\left(\cos^{2}\left(fx+e\right)\right)-2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}+2\cos\left(fx+e\right)-1\right)}{\sin\left(fx+e\right)^{2}}\right)-\cdots}{2f\sin\left(fx+e\right)\left(a\,s\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(5/2),x)
```

```
[Out] -1/2/f*(-1+cos(f*x+e))*(cos(f*x+e)*ln(-2*(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^
(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*co
s(f*x+e)-1)/sin(f*x+e)^2)+cos(f*x+e)*arctan(1/2/(-cos(f*x+e)/(1+cos(f*x+e))
^2)^(1/2))+4*cos(f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+4*(-cos(f*x+e)
/(1+cos(f*x+e))^2)^(1/2))*cos(f*x+e)*(b*sin(f*x+e)/cos(f*x+e))^(3/2)/sin(f*
x+e)/(a*sin(f*x+e))^(5/2)/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
```

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

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(a*sin(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(a*sin(f*x + e))^(5/2), x)
```

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

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}{\left(a\,\sin\left(e+f\,x\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(a*sin(e + f*x))^(5/2),x)
```

```
[Out] int((b*tan(e + f*x))^(3/2)/(a*sin(e + f*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(a*sin(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.126 $\int \frac{(a\sin(e+fx))^{9/2}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=123

$$\frac{8a^4E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{15f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{4a^2b(a\sin(e+fx))^{5/2}}{15f(b\tan(e+fx))^{3/2}}-\frac{2b(a\sin(e+fx))^{9/2}}{9f(b\tan(e+fx))^{3/2}}$$

```
[Out] 8/15*a^4*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticE(sin(1/2*
e+1/2*f*x),2^(1/2))*(a*sin(f*x+e))^(1/2)/f/cos(f*x+e)^(1/2)/(b*tan(f*x+e))^
(1/2)-4/15*a^2*b*(a*sin(f*x+e))^(5/2)/f/(b*tan(f*x+e))^(3/2)-2/9*b*(a*sin(f
*x+e))^(9/2)/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.16, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2598, 2601, 2639}

$$-\frac{4a^2b(a\sin(e+fx))^{5/2}}{15f(b\tan(e+fx))^{3/2}}+\frac{8a^4E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{15f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{2b(a\sin(e+fx))^{9/2}}{9f(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(9/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-4*a^2*b*(a*Sin[e + f*x])^(5/2))/(15*f*(b*Tan[e + f*x])^(3/2)) - (2*b*(a*S
in[e + f*x])^(9/2))/(9*f*(b*Tan[e + f*x])^(3/2)) + (8*a^4*EllipticE[(e + f*
x)/2, 2]*Sqrt[a*Sin[e + f*x]])/(15*f*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]
])
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] && !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
```

```
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{(a\sin(e+fx))^{9/2}}{\sqrt{b\tan(e+fx)}}\,dx &= -\frac{2b(a\sin(e+fx))^{9/2}}{9f(b\tan(e+fx))^{3/2}}+\frac{1}{3}\left(2a^2\right)\int \frac{(a\sin(e+fx))^{5/2}}{\sqrt{b\tan(e+fx)}}\,dx\\
&= -\frac{4a^2b(a\sin(e+fx))^{5/2}}{15f(b\tan(e+fx))^{3/2}}-\frac{2b(a\sin(e+fx))^{9/2}}{9f(b\tan(e+fx))^{3/2}}+\frac{1}{15}\left(4a^4\right)\int \frac{\sqrt{a\sin(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx\\
&= -\frac{4a^2b(a\sin(e+fx))^{5/2}}{15f(b\tan(e+fx))^{3/2}}-\frac{2b(a\sin(e+fx))^{9/2}}{9f(b\tan(e+fx))^{3/2}}+\frac{\left(4a^4\sqrt{a\sin(e+fx)}\right)\int \sqrt{\cos(e+fx)}}{15\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}\\
&= -\frac{4a^2b(a\sin(e+fx))^{5/2}}{15f(b\tan(e+fx))^{3/2}}-\frac{2b(a\sin(e+fx))^{9/2}}{9f(b\tan(e+fx))^{3/2}}+\frac{8a^4E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{15f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.52, size = 100, normalized size = 0.81

$$\frac{a^4\sin(2(e+fx))\sqrt{a\sin(e+fx)}\left(12\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)+\cos^2(e+fx)^{3/4}(5\cos(2(e+fx))-17)\right)}{90f\cos^2(e+fx)^{3/4}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(9/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (a^4*((Cos[e + f*x]^2)^(3/4)*(-17 + 5*Cos[2*(e + f*x)]) + 12*Hypergeometric
2F1[1/4, 1/2, 3/2, Sin[e + f*x]^2])*Sqrt[a*Sin[e + f*x]]*Sin[2*(e + f*x)])/
(90*f*(Cos[e + f*x]^2)^(3/4)*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.80, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^4\cos\left(fx+e\right)^4-2\,a^4\cos\left(fx+e\right)^2+a^4\right)\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}}{b\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((a^4*cos(f*x + e)^4 - 2*a^4*cos(f*x + e)^2 + a^4)*sqrt(a*sin(f*x +
 e))*sqrt(b*tan(f*x + e))/(b*tan(f*x + e)), x)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{9}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(9/2)/sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.58, size = 349, normalized size = 2.84

$$\frac{2\left(12i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)-12i\sin\left(fx+e\right)\cos\left(f\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/45/f*(12*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ell
ipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)-12*I*(1/(1+cos
(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticE(I*(-1+cos(f*x+e
))/sin(f*x+e),I)*cos(f*x+e)*sin(f*x+e)-5*cos(f*x+e)^6+12*I*(1/(1+cos(f*x+e)
))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(
f*x+e),I)*sin(f*x+e)-12*I*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(1/(1+c
os(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+16*cos(f*x+e
)^4-23*cos(f*x+e)^2+12*cos(f*x+e))*(a*sin(f*x+e))^(9/2)/cos(f*x+e)/sin(f*x+
e)^5/(b*sin(f*x+e)/cos(f*x+e))^(1/2)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{9}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^(9/2)/sqrt(b*tan(f*x + e)), x)
```

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

$$\int \frac{\left(a\,\sin\left(e+f\,x\right)\right)^{9/2}}{\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(9/2)/(b*tan(e + f*x))^(1/2),x)
[Out] int((a*sin(e + f*x))^(9/2)/(b*tan(e + f*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(9/2)/(b*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.127 $\int \frac{(a\sin(e+fx))^{7/2}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=68

$$-\frac{8a^2b(a\sin(e+fx))^{3/2}}{21f(b\tan(e+fx))^{3/2}}-\frac{2b(a\sin(e+fx))^{7/2}}{7f(b\tan(e+fx))^{3/2}}$$

```
[Out] -8/21*a^2*b*(a*sin(f*x+e))^(3/2)/f/(b*tan(f*x+e))^(3/2)-2/7*b*(a*sin(f*x+e)
)^(7/2)/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2598, 2589}

$$-\frac{8a^2b(a\sin(e+fx))^{3/2}}{21f(b\tan(e+fx))^{3/2}}-\frac{2b(a\sin(e+fx))^{7/2}}{7f(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(7/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-8*a^2*b*(a*Sin[e + f*x])^(3/2))/(21*f*(b*Tan[e + f*x])^(3/2)) - (2*b*(a*S
in[e + f*x])^(7/2))/(7*f*(b*Tan[e + f*x])^(3/2))
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^{7/2}}{\sqrt{b\tan(e+fx)}}\,dx = -\frac{2b(a\sin(e+fx))^{7/2}}{7f(b\tan(e+fx))^{3/2}} + \frac{1}{7}\left(4a^2\right)\int \frac{(a\sin(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx$$
$$= -\frac{8a^2b(a\sin(e+fx))^{3/2}}{21f(b\tan(e+fx))^{3/2}} - \frac{2b(a\sin(e+fx))^{7/2}}{7f(b\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 0.16, size = 52, normalized size = 0.76

$$\frac{a^3\cos(e+fx)(3\cos(2(e+fx))-11)\sqrt{a\sin(e+fx)}}{21f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(7/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (a^3*Cos[e + f*x]*(-11 + 3*Cos[2*(e + f*x)])*Sqrt[a*Sin[e + f*x]])/(21*f*Sq
rt[b*Tan[e + f*x]])
```

fricas [A] time = 0.66, size = 71, normalized size = 1.04

$$\frac{2\left(3\,a^3\cos\left(fx+e\right)^4 - 7\,a^3\cos\left(fx+e\right)^2\right)\sqrt{a\sin\left(fx+e\right)}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}{21\,bf\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 2/21*(3*a^3*cos(f*x + e)^4 - 7*a^3*cos(f*x + e)^2)*sqrt(a*sin(f*x + e))*sqr
t(b*sin(f*x + e)/cos(f*x + e))/(b*f*sin(f*x + e))
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{7}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(7/2)/sqrt(b*tan(f*x + e)), x)
```

maple [A] time = 0.50, size = 60, normalized size = 0.88

$$\frac{2\left(3\left(\cos^{2}\left(fx+e\right)\right)-7\right)\left(a\sin\left(fx+e\right)\right)^{\frac{7}{2}}\cos\left(fx+e\right)}{21f\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/21/f*(3*cos(f*x+e)^2-7)*(a*sin(f*x+e))^(7/2)*cos(f*x+e)/(b*sin(f*x+e)/cos
(f*x+e))^(1/2)/sin(f*x+e)^3
```

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

$$\int\frac{\left(a\sin\left(fx+e\right)\right)^{\frac{7}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(7/2)/sqrt(b*tan(f*x + e)), x)
```

mupad [B] time = 4.82, size = 88, normalized size = 1.29

$$-\frac{a^{3}\sqrt{a\,\sin\left(e+f\,x\right)}\,\sqrt{-\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{2\,\sin\left(e+f\,x\right)^{2}-2}}\,\left(22\,\sin\left(e+f\,x\right)+19\,\sin\left(3\,e+3\,f\,x\right)-3\,\sin\left(5\,e+5\,f\,x\right)\right)}{168\,b\,f\,\sin\left(e+f\,x\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(7/2)/(b*tan(e + f*x))^(1/2),x)
```

```
[Out] -(a^3*(a*sin(e + f*x))^(1/2)*(-(b*sin(2*e + 2*f*x))/(2*sin(e + f*x)^2 - 2))
^(1/2)*(22*sin(e + f*x) + 19*sin(3*e + 3*f*x) - 3*sin(5*e + 5*f*x)))/(168*b
*f*sin(e + f*x)^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(7/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.128 $\int \frac{(a\sin(e+fx))^{5/2}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=88

$$\frac{4a^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{5f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{3/2}}$$

```
[Out] 4/5*a^2*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticE(sin(1/2*e
+1/2*f*x),2^(1/2))*(a*sin(f*x+e))^(1/2)/f/cos(f*x+e)^(1/2)/(b*tan(f*x+e))^(
1/2)-2/5*b*(a*sin(f*x+e))^(5/2)/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2598, 2601, 2639}

$$\frac{4a^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{5f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(5/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-2*b*(a*Sin[e + f*x])^(5/2))/(5*f*(b*Tan[e + f*x])^(3/2)) + (4*a^2*Ellipti
cE[(e + f*x)/2, 2]*Sqrt[a*Sin[e + f*x]])/(5*f*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan
[e + f*x]])
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{(a\sin(e+fx))^{5/2}}{\sqrt{b\tan(e+fx)}}\,dx &= -\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{3/2}}+\frac{1}{5}\left(2a^2\right)\int \frac{\sqrt{a\sin(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx\\ &= -\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{3/2}}+\frac{\left(2a^2\sqrt{a\sin(e+fx)}\right)\int \sqrt{\cos(e+fx)}\,dx}{5\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}\\ &= -\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{3/2}}+\frac{4a^2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{5f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.24, size = 87, normalized size = 0.99

$$-\frac{a^2\sin(2(e+fx))\sqrt{a\sin(e+fx)}\left(\cos^2(e+fx)^{3/4}-{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)\right)}{5f\cos^2(e+fx)^{3/4}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(5/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] -1/5*(a^2*((Cos[e + f*x]^2)^(3/4) - Hypergeometric2F1[1/4, 1/2, 3/2, Sin[e
+ f*x]^2])*Sqrt[a*Sin[e + f*x]]*Sin[2*(e + f*x)])/(f*(Cos[e + f*x]^2)^(3/4)
*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2\cos\left(fx+e\right)^2-a^2\right)\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{b\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(a^2*cos(f*x + e)^2 - a^2)*sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x +
e))/(b*tan(f*x + e)), x)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(5/2)/sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.56, size = 337, normalized size = 3.83

$$2\left(2i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)-2i\sin\left(fx+e\right)\cos\left(fx\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/5/f*(2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ellip
ticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)-2*I*cos(f*x+e)*s
in(f*x+e)*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ellipt
icE(I*(-1+cos(f*x+e))/sin(f*x+e),I)+2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e
)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e
)-2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticE(
I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)+cos(f*x+e)^4-3*cos(f*x+e)^2+2*co
s(f*x+e))*(a*sin(f*x+e))^(5/2)/(b*sin(f*x+e)/cos(f*x+e))^(1/2)/cos(f*x+e)/s
in(f*x+e)^3
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(5/2)/sqrt(b*tan(f*x + e)), x)
```

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

$$\int \frac{\left(a\,\sin\left(e+f\,x\right)\right)^{5/2}}{\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(5/2)/(b*tan(e + f*x))^(1/2),x)
[Out] int((a*sin(e + f*x))^(5/2)/(b*tan(e + f*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(5/2)/(b*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.129 $\int \frac{(a\sin(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=32

$$-\frac{2b(a\sin(e+fx))^{3/2}}{3f(b\tan(e+fx))^{3/2}}$$

```
[Out] -2/3*b*(a*sin(f*x+e))^(3/2)/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2589}

$$-\frac{2b(a\sin(e+fx))^{3/2}}{3f(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(3/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-2*b*(a*Sin[e + f*x])^(3/2))/(3*f*(b*Tan[e + f*x])^(3/2))
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx = -\frac{2b(a\sin(e+fx))^{3/2}}{3f(b\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 0.14, size = 32, normalized size = 1.00

$$-\frac{2b(a\sin(e+fx))^{3/2}}{3f(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(3/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (-2*b*(a*Sin[e + f*x])^(3/2))/(3*f*(b*Tan[e + f*x])^(3/2))
```

fricas [B] time = 0.62, size = 53, normalized size = 1.66

$$-\frac{2 \sqrt{a \sin\left(fx+e\right)} a \sqrt{\frac{b \sin\left(fx+e\right)}{\cos\left(fx+e\right)}} \cos\left(fx+e\right)^{2}}{3 \, b f \sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] -2/3*sqrt(a*sin(f*x + e))*a*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)^
2/(b*f*sin(f*x + e))
```

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

$$\int \frac{\left(a \sin\left(fx+e\right)\right)^{\frac{3}{2}}}{\sqrt{b \tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(3/2)/sqrt(b*tan(f*x + e)), x)
```

maple [A] time = 0.47, size = 48, normalized size = 1.50

$$-\frac{2 \left(a \sin\left(fx+e\right)\right)^{\frac{3}{2}} \cos\left(fx+e\right)}{3 f \sqrt{\frac{b \sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\, \sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -2/3/f*(a*sin(f*x+e))^(3/2)*cos(f*x+e)/(b*sin(f*x+e)/cos(f*x+e))^(1/2)/sin(
f*x+e)
```

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

$$\int \frac{\left(a \sin\left(fx+e\right)\right)^{\frac{3}{2}}}{\sqrt{b \tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(3/2)/sqrt(b*tan(f*x + e)), x)
```

mupad [B] time = 3.63, size = 69, normalized size = 2.16

$$-\frac{a\sqrt{a\sin\left(e+f\,x\right)}\,\left(\sin\left(e+f\,x\right)+\sin\left(3\,e+3\,f\,x\right)\right)\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{6\,b\,f\,{\sin\left(e+f\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(3/2)/(b*tan(e + f*x))^(1/2),x)
```

```
[Out] -(a*(a*sin(e + f*x))^(1/2)*(sin(e + f*x) + sin(3*e + 3*f*x))*((b*sin(2*e +
2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(6*b*f*sin(e + f*x)^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(3/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.130 $\int \frac{\sqrt{a\sin(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=50

$$\frac{2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

```
[Out] 2*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticE(sin(1/2*e+1/2*f
*x),2^(1/2))*(a*sin(f*x+e))^(1/2)/f/cos(f*x+e)^(1/2)/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2601, 2639}

$$\frac{2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a*Sin[e + f*x]]/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (2*EllipticE[(e + f*x)/2, 2]*Sqrt[a*Sin[e + f*x]])/(f*Sqrt[Cos[e + f*x]]*Sq
rt[b*Tan[e + f*x]])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\sqrt{a\sin(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx = \frac{\sqrt{a\sin(e+fx)}\int \sqrt{\cos(e+fx)}\,dx}{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$
$$= \frac{2E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

Mathematica [C] time = 0.15, size = 69, normalized size = 1.38

$$\frac{\sin(2(e+fx))\sqrt{a\sin(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)}{2f\cos^2(e+fx)^{3/4}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a*Sin[e + f*x]]/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (Hypergeometric2F1[1/4, 1/2, 3/2, Sin[e + f*x]^2]*Sqrt[a*Sin[e + f*x]]*Sin[
2*(e + f*x)])/(2*f*(Cos[e + f*x]^2)^(3/4)*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{b\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))/(b*tan(f*x + e)), x)
```

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

$$\int \frac{\sqrt{a\sin\left(fx+e\right)}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(a*sin(f*x + e))/sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.53, size = 327, normalized size = 6.54

$$\frac{2\sqrt{a\sin\left(fx+e\right)}\,\left(i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)-i\sin\left(fx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/f*(a*sin(f*x+e))^(1/2)*(I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)
-I*cos(f*x+e)*sin(f*x+e)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(1/(1+co
s(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+I*(1/(1+cos(f*x+e)))^(1/
2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e)
,I)*sin(f*x+e)-I*sin(f*x+e)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(1/(1
+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)-cos(f*x+e)^2+cos(f*x+
e))/(b*sin(f*x+e)/cos(f*x+e))^(1/2)/sin(f*x+e)/cos(f*x+e)
```

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

$$\int \frac{\sqrt{a\sin\left(fx+e\right)}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(f*x + e))/sqrt(b*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{a\,\sin\left(e+f\,x\right)}}{\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(1/2)/(b*tan(e + f*x))^(1/2),x)
```

```
[Out] int((a*sin(e + f*x))^(1/2)/(b*tan(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{a \sin \left(e + f x\right)}}{\sqrt{b \tan \left(e + f x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(1/2)/(b*tan(f*x+e))**(1/2),x)
[Out] Integral(sqrt(a*sin(e + f*x))/sqrt(b*tan(e + f*x)), x)
```

3.131 $\int \frac{1}{\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=106

$$\frac{\sqrt{a\sin(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}-\frac{\sqrt{a\sin(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

```
[Out] arctan(cos(f*x+e)^(1/2))*(a*sin(f*x+e))^(1/2)/a/f/cos(f*x+e)^(1/2)/(b*tan(f
*x+e))^(1/2)-arctanh(cos(f*x+e)^(1/2))*(a*sin(f*x+e))^(1/2)/a/f/cos(f*x+e)^
(1/2)/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2601, 12, 2565, 329, 298, 203, 206}

$$\frac{\sqrt{a\sin(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}-\frac{\sqrt{a\sin(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{af\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (ArcTan[Sqrt[Cos[e + f*x]]]*Sqrt[a*Sin[e + f*x]])/(a*f*Sqrt[Cos[e + f*x]]*S
qrt[b*Tan[e + f*x]]) - (ArcTanh[Sqrt[Cos[e + f*x]]]*Sqrt[a*Sin[e + f*x]])/(
a*f*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

Rule 12

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

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2565

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_.)*sin[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> -Dist[(a*f)^(-1), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x
, a*Cos[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&
!(IntegerQ[(m - 1)/2] && GtQ[m, 0] && LeQ[m, n])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \frac{1}{\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}\,dx = \frac{\sqrt{a\sin(e+fx)}\int \frac{\sqrt{\cos(e+fx)}\csc(e+fx)}{a}\,dx}{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$
$$= \frac{\sqrt{a\sin(e+fx)}\int \sqrt{\cos(e+fx)}\csc(e+fx)\,dx}{a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$
$$= -\frac{\sqrt{a\sin(e+fx)}\,\text{Subst}\left(\int \frac{\sqrt{x}}{1-x^2}\,dx, x, \cos(e+fx)\right)}{af\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$
$$= -\frac{\left(2\sqrt{a\sin(e+fx)}\right)\text{Subst}\left(\int \frac{x^2}{1-x^4}\,dx, x, \sqrt{\cos(e+fx)}\right)}{af\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$
$$= -\frac{\sqrt{a\sin(e+fx)}\,\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{\cos(e+fx)}\right)}{af\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}} + \frac{\sqrt{a\sin(e+fx)}\,\text{S}}{af\sqrt{\cos}}$$
$$= \frac{\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{a\sin(e+fx)}}{af\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{a\sin(}}{af\sqrt{\cos(e+fx)}\sqrt{b\tan(e+}}$$

Mathematica [A] time = 0.15, size = 80, normalized size = 0.75

$$\frac{\sin(2(e+fx))\left(\tan^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)-\tanh^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)\right)}{2f\cos^2(e+fx)^{3/4}\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]]),x]
[Out] ((ArcTan[(Cos[e + f*x]^2)^(1/4)] - ArcTanh[(Cos[e + f*x]^2)^(1/4)])*Sin[2*(
e + f*x)])/(2*f*(Cos[e + f*x]^2)^(3/4)*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e +
f*x]])
```

fricas [B] time = 1.24, size = 419, normalized size = 3.95

$$\left[\frac{2\sqrt{-ab}\arctan\left(\frac{2\sqrt{-ab}\sqrt{a\sin(fx+e)}\sqrt{\frac{b\sin(fx+e)}{\cos(fx+e)}}\cos(fx+e)}{(ab\cos(fx+e)+ab)\sin(fx+e)}\right)-\sqrt{-ab}\log\left(-\frac{ab\cos(fx+e)^3-5ab\cos(fx+e)^2+4\sqrt{-ab}\sqrt{a\sin(fx+e)}\,\sqrt{}}{\cos(fx+e)^3+3\cos(fx+}\right.}{4abf}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] [1/4*(2*sqrt(-a*b)*arctan(2*sqrt(-a*b)*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x
+ e)/cos(f*x + e))*cos(f*x + e)/((a*b*cos(f*x + e) + a*b)*sin(f*x + e))) -
sqrt(-a*b)*log(-(a*b*cos(f*x + e)^3 - 5*a*b*cos(f*x + e)^2 + 4*sqrt(-a*b)*s
qrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)*sin(f*x
+ e) - 5*a*b*cos(f*x + e) + a*b)/(cos(f*x + e)^3 + 3*cos(f*x + e)^2 + 3*cos
(f*x + e) + 1)))/(a*b*f), -1/4*(2*sqrt(a*b)*arctan(2*sqrt(a*b)*sqrt(a*sin(f
*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)/((a*b*cos(f*x + e)
- a*b)*sin(f*x + e))) - sqrt(a*b)*log((4*sqrt(a*b)*(cos(f*x + e)^2 + cos(f*
x + e))*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e)) - (a*b*cos(f
*x + e)^2 + 6*a*b*cos(f*x + e) + a*b)*sin(f*x + e))/((cos(f*x + e)^2 - 2*co
s(f*x + e) + 1)*sin(f*x + e))))/(a*b*f)]
```

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

$$\int \frac{1}{\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))), x)
```

maple [A] time = 0.51, size = 177, normalized size = 1.67

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(\arctan\left(\frac{1}{2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}}\right)+\ln\left(-\frac{2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}\,\left(\cos^2(fx+e)\right)-\left(\cos^2(fx+e)\right)-2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}+2}{\sin(fx+e)^2}\right.\right.}{2f\sqrt{a\sin\left(fx+e\right)}\,\sin\left(fx+e\right)\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}\,\sqrt{\frac{b\sin(fx+e)}{\cos(fx+e)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/2/f*(-1+cos(f*x+e))*(arctan(1/2/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2))+ln
(-(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos
(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2))/(a*sin(f*x+e
```

```
))^(1/2)/sin(f*x+e)/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)/(b*sin(f*x+e)/cos(
f*x+e))^(1/2)
```

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

$$\int \frac{1}{\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))), x)
```

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

$$\int \frac{1}{\sqrt{a\,\sin\left(e+f\,x\right)}\,\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^(1/2)),x)
```

```
[Out] int(1/((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^(1/2)), x)
```

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

$$\int \frac{1}{\sqrt{a\sin\left(e+fx\right)}\sqrt{b\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))**(1/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a*sin(e + f*x))*sqrt(b*tan(e + f*x))), x)
```

3.132 $\int \frac{1}{(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=87

$$-\frac{b\sqrt{a\sin(e+fx)}}{a^2f(b\tan(e+fx))^{3/2}}-\frac{E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{a^2f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

```
[Out] -(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticE(sin(1/2*e+1/2*f*
x),2^(1/2))*(a*sin(f*x+e))^(1/2)/a^2/f/cos(f*x+e)^(1/2)/(b*tan(f*x+e))^(1/2
)-b*(a*sin(f*x+e))^(1/2)/a^2/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.11, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2599, 2601, 2639}

$$-\frac{b\sqrt{a\sin(e+fx)}}{a^2f(b\tan(e+fx))^{3/2}}-\frac{E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{a^2f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a*Sin[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] -((b*Sqrt[a*Sin[e + f*x]])/(a^2*f*(b*Tan[e + f*x])^(3/2))) - (EllipticE[(e
+ f*x)/2, 2]*Sqrt[a*Sin[e + f*x]])/(a^2*f*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e +
 f*x]])
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}\,dx &= -\frac{b\sqrt{a\sin(e+fx)}}{a^2f(b\tan(e+fx))^{3/2}}-\frac{\int \frac{\sqrt{a\sin(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx}{2a^2}\\ &= -\frac{b\sqrt{a\sin(e+fx)}}{a^2f(b\tan(e+fx))^{3/2}}-\frac{\sqrt{a\sin(e+fx)}\int \sqrt{\cos(e+fx)}\,dx}{2a^2\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}\\ &= -\frac{b\sqrt{a\sin(e+fx)}}{a^2f(b\tan(e+fx))^{3/2}}-\frac{E\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{a\sin(e+fx)}}{a^2f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.35, size = 89, normalized size = 1.02

$$-\frac{b\sqrt{a\sin(e+fx)}\left(\sin^2(e+fx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)+2\cos^2(e+fx)^{3/4}\right)}{2a^2f\cos^2(e+fx)^{3/4}(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a*Sin[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] -1/2*(b*Sqrt[a*Sin[e + f*x]]*(2*(Cos[e + f*x]^2)^(3/4) + Hypergeometric2F1[
1/4, 1/2, 3/2, Sin[e + f*x]^2]*Sin[e + f*x]^2))/(a^2*f*(Cos[e + f*x]^2)^(3/
4)*(b*Tan[e + f*x])^(3/2))
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{\left(a^2b\cos\left(fx+e\right)^2-a^2b\right)\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(-sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))/((a^2*b*cos(f*x + e)^2
 - a^2*b)*tan(f*x + e)), x)
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sin(f*x + e))^(3/2)*sqrt(b*tan(f*x + e))), x)
```

maple [C] time = 0.55, size = 315, normalized size = 3.62

$$-\frac{\left(i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \mathrm{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)-i\sin\left(fx+e\right)\cos\left(fx+e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Elliptic
F(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)-I*cos(f*x+e)*sin(f*
x+e)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(1/(1+cos(f*x+e)))^(1/2)*(co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)+I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)-I*sin
(f*x+e)*EllipticE(I*(-1+cos(f*x+e))/sin(f*x+e),I)*(1/(1+cos(f*x+e)))^(1/2)*
(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+cos(f*x+e))*sin(f*x+e)/(a*sin(f*x+e))^(3/
2)/(b*sin(f*x+e)/cos(f*x+e))^(1/2)/cos(f*x+e)
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((a*sin(f*x + e))^(3/2)*sqrt(b*tan(f*x + e))), x)
```

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

$$\int \frac{1}{\left(a\,\sin\left(e+f\,x\right)\right)^{3/2}\,\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^(1/2)),x)
[Out] int(1/((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^(1/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))**(3/2)/(b*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.133 $\int \frac{1}{(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=146

$$\frac{\sqrt{a\sin(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{4a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{\sqrt{a\sin(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{4a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+$$

```
[Out] 1/4*arctan(cos(f*x+e)^(1/2))*(a*sin(f*x+e))^(1/2)/a^3/f/cos(f*x+e)^(1/2)/(b
*tan(f*x+e))^(1/2)-1/4*arctanh(cos(f*x+e)^(1/2))*(a*sin(f*x+e))^(1/2)/a^3/f
/cos(f*x+e)^(1/2)/(b*tan(f*x+e))^(1/2)-1/2*b/a^2/f/(a*sin(f*x+e))^(1/2)/(b*
tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.14, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {2599, 2601, 12, 2565, 329, 298, 203, 206}

$$-\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}}+\frac{\sqrt{a\sin(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{4a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{\sqrt{a\sin(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(\right.}{4a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan(e}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a*Sin[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] -b/(2*a^2*f*Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^(3/2)) + (ArcTan[Sqrt[Cos
[e + f*x]]]*Sqrt[a*Sin[e + f*x]])/(4*a^3*f*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e
+ f*x]]) - (ArcTanh[Sqrt[Cos[e + f*x]]]*Sqrt[a*Sin[e + f*x]])/(4*a^3*f*Sqrt
[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

Rule 12

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

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2565

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_.)*sin[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> -Dist[(a*f)^(-1), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x
, a*Cos[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&
!(IntegerQ[(m - 1)/2] && GtQ[m, 0] && LeQ[m, n])
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \frac{1}{(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}\,dx = -\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}} + \frac{\int \frac{1}{\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}\,dx}{4a^2}$$

$$= -\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}} + \frac{\sqrt{a\sin(e+fx)}\int \frac{\sqrt{\cos(e+fx)}}{a}}{4a^2\sqrt{\cos(e+fx)}\sqrt{b\tan}}$$

$$= -\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}} + \frac{\sqrt{a\sin(e+fx)}\int \sqrt{\cos(e+}}{4a^3\sqrt{\cos(e+fx)}\sqrt{b}}$$

$$= -\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}} - \frac{\sqrt{a\sin(e+fx)}\,\mathrm{Subst}\left(\int \frac{\sqrt{}}{1-}\right.}{4a^3f\sqrt{\cos(e+fx)}\sqrt{}}$$

$$= -\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}} - \frac{\sqrt{a\sin(e+fx)}\,\mathrm{Subst}\left(\int \frac{x}{1-}\right.}{2a^3f\sqrt{\cos(e+fx)}}$$

$$= -\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}} - \frac{\sqrt{a\sin(e+fx)}\,\mathrm{Subst}\left(\int \frac{}{1-}\right.}{4a^3f\sqrt{\cos(e+fx)}}$$

$$= -\frac{b}{2a^2f\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}} + \frac{\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{a\,\mathrm{s}}}{4a^3f\sqrt{\cos(e+fx)}\sqrt{b\tan}}$$

Mathematica [A] time = 0.63, size = 112, normalized size = 0.77

$$\frac{-4\cos^2(e+fx)^{3/4}\cot(e+fx)+\sin(2(e+fx))\tan^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)-\sin(2(e+fx))\tanh^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right.}{8a^2f\cos^2(e+fx)^{3/4}\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a*Sin[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (-4*(Cos[e + f*x]^2)^(3/4)*Cot[e + f*x] + ArcTan[(Cos[e + f*x]^2)^(1/4)]*Si
n[2*(e + f*x)] - ArcTanh[(Cos[e + f*x]^2)^(1/4)]*Sin[2*(e + f*x)])/(8*a^2*f
*(Cos[e + f*x]^2)^(3/4)*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [B] time = 0.99, size = 605, normalized size = 4.14

$$\left[\frac{2\sqrt{-ab}\left(\cos\left(fx+e\right)^2-1\right)\arctan\left(\frac{2\sqrt{-ab}\sqrt{a\sin\left(fx+e\right)}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)}{\left(ab\cos\left(fx+e\right)+ab\right)\sin\left(fx+e\right)}\right)\sin\left(fx+e\right)-\sqrt{-ab}\left(\cos\left(fx+e\right)^2-1\right.}{16}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] [1/16*(2*sqrt(-a*b)*(cos(f*x + e)^2 - 1)*arctan(2*sqrt(-a*b)*sqrt(a*sin(f*x
 + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)/((a*b*cos(f*x + e) +
a*b)*sin(f*x + e)))*sin(f*x + e) - sqrt(-a*b)*(cos(f*x + e)^2 - 1)*log(-(a*
b*cos(f*x + e)^3 - 5*a*b*cos(f*x + e)^2 + 4*sqrt(-a*b)*sqrt(a*sin(f*x + e))
*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 5*a*b*cos(f*
x + e) + a*b)/(cos(f*x + e)^3 + 3*cos(f*x + e)^2 + 3*cos(f*x + e) + 1))*sin
(f*x + e) + 8*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*
x + e)^2)/((a^3*b*f*cos(f*x + e)^2 - a^3*b*f)*sin(f*x + e)), -1/16*(2*sqrt(
a*b)*(cos(f*x + e)^2 - 1)*arctan(2*sqrt(a*b)*sqrt(a*sin(f*x + e))*sqrt(b*si
n(f*x + e)/cos(f*x + e))*cos(f*x + e)/((a*b*cos(f*x + e) - a*b)*sin(f*x + e
)))*sin(f*x + e) - sqrt(a*b)*(cos(f*x + e)^2 - 1)*log((4*sqrt(a*b)*(cos(f*x
 + e)^2 + cos(f*x + e))*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x +
e)) - (a*b*cos(f*x + e)^2 + 6*a*b*cos(f*x + e) + a*b)*sin(f*x + e))/((cos(f
*x + e)^2 - 2*cos(f*x + e) + 1)*sin(f*x + e)))*sin(f*x + e) - 8*sqrt(a*sin(
f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)^2)/((a^3*b*f*cos(f
*x + e)^2 - a^3*b*f)*sin(f*x + e))]
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sin(f*x + e))^(5/2)*sqrt(b*tan(f*x + e))), x)
```

maple [B] time = 0.58, size = 319, normalized size = 2.18

$$-\frac{\left(4\cos\left(fx+e\right)\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}+\cos\left(fx+e\right)\ln\left(-\frac{2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}\left(\cos^2(fx+e)\right)-\left(\cos^2(fx+e)\right)-2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}+2\,\mathrm{c}}{\sin(fx+e)^2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/8/f*(4*cos(f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+cos(f*x+e)*ln(-(2
*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x
+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)+cos(f*x+e)*arctan
(1/2/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2))-ln(-(2*(-cos(f*x+e)/(1+cos(f*x+e
))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2
)+2*cos(f*x+e)-1)/sin(f*x+e)^2)-arctan(1/2/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(
1/2)))*sin(f*x+e)/(a*sin(f*x+e))^(5/2)/(b*sin(f*x+e)/cos(f*x+e))^(1/2)/(-co
s(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((a*sin(f*x + e))^(5/2)*sqrt(b*tan(f*x + e))), x)
```

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

$$\int \frac{1}{\left(a\,\sin\left(e+f\,x\right)\right)^{5/2}\,\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*sin(e + f*x))^(5/2)*(b*tan(e + f*x))^(1/2)),x)
```

```
[Out] int(1/((a*sin(e + f*x))^(5/2)*(b*tan(e + f*x))^(1/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))**(5/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.134 $\int \frac{(a\sin(e+fx))^{13/2}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=146

$$-\frac{64a^6\sqrt{a\sin(e+fx)}}{585bf\sqrt{b\tan(e+fx)}}-\frac{16a^4(a\sin(e+fx))^{5/2}}{585bf\sqrt{b\tan(e+fx)}}-\frac{2a^2(a\sin(e+fx))^{9/2}}{117bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{13/2}}{13bf\sqrt{b\tan(e+fx)}}$$

```
[Out] -16/585*a^4*(a*sin(f*x+e))^(5/2)/b/f/(b*tan(f*x+e))^(1/2)-2/117*a^2*(a*sin(
f*x+e))^(9/2)/b/f/(b*tan(f*x+e))^(1/2)+2/13*(a*sin(f*x+e))^(13/2)/b/f/(b*ta
n(f*x+e))^(1/2)-64/585*a^6*(a*sin(f*x+e))^(1/2)/b/f/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2596, 2598, 2589}

$$-\frac{2a^2(a\sin(e+fx))^{9/2}}{117bf\sqrt{b\tan(e+fx)}}-\frac{16a^4(a\sin(e+fx))^{5/2}}{585bf\sqrt{b\tan(e+fx)}}-\frac{64a^6\sqrt{a\sin(e+fx)}}{585bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{13/2}}{13bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(13/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-64*a^6*Sqrt[a*Sin[e + f*x]])/(585*b*f*Sqrt[b*Tan[e + f*x]]) - (16*a^4*(a*
Sin[e + f*x])^(5/2))/(585*b*f*Sqrt[b*Tan[e + f*x]]) - (2*a^2*(a*Sin[e + f*x
])^(9/2))/(117*b*f*Sqrt[b*Tan[e + f*x]]) + (2*(a*Sin[e + f*x])^(13/2))/(13*
b*f*Sqrt[b*Tan[e + f*x]])
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
```

```
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^{13/2}}{(b\tan(e+fx))^{3/2}}\,dx = \frac{2(a\sin(e+fx))^{13/2}}{13bf\sqrt{b\tan(e+fx)}} + \frac{a^2\int(a\sin(e+fx))^{9/2}\sqrt{b\tan(e+fx)}\,dx}{13b^2}$$

$$= -\frac{2a^2(a\sin(e+fx))^{9/2}}{117bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{13/2}}{13bf\sqrt{b\tan(e+fx)}} + \frac{\left(8a^4\right)\int(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+}}{117b^2}$$

$$= -\frac{16a^4(a\sin(e+fx))^{5/2}}{585bf\sqrt{b\tan(e+fx)}} - \frac{2a^2(a\sin(e+fx))^{9/2}}{117bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{13/2}}{13bf\sqrt{b\tan(e+fx)}} + \frac{\left(32a^6\right)\int\sqrt{}}{}$$

$$= -\frac{64a^6\sqrt{a\sin(e+fx)}}{585bf\sqrt{b\tan(e+fx)}} - \frac{16a^4(a\sin(e+fx))^{5/2}}{585bf\sqrt{b\tan(e+fx)}} - \frac{2a^2(a\sin(e+fx))^{9/2}}{117bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e}{13bf\sqrt{b\,t}}$$

Mathematica [A] time = 0.43, size = 67, normalized size = 0.46

$$\frac{a^6\cos^2(e+fx)(340\cos(2(e+fx))-45\cos(4(e+fx))-551)\sqrt{a\sin(e+fx)}}{2340bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(13/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (a^6*Cos[e + f*x]^2*(-551 + 340*Cos[2*(e + f*x)] - 45*Cos[4*(e + f*x)])*Sqr
t[a*Sin[e + f*x]])/(2340*b*f*Sqrt[b*Tan[e + f*x]])
```

fricas [A] time = 0.49, size = 84, normalized size = 0.58

$$-\frac{2\left(45\,a^6\cos\left(fx+e\right)^7-130\,a^6\cos\left(fx+e\right)^5+117\,a^6\cos\left(fx+e\right)^3\right)\sqrt{a\sin\left(fx+e\right)}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}{585\,b^2f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(13/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] -2/585*(45*a^6*cos(f*x + e)^7 - 130*a^6*cos(f*x + e)^5 + 117*a^6*cos(f*x +
e)^3)*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))/(b^2*f*sin(f*x
 + e))
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{13}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(13/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(13/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [A] time = 0.49, size = 70, normalized size = 0.48

$$-\frac{2\left(45\left(\cos^{4}\left(fx+e\right)\right)-130\left(\cos^{2}\left(fx+e\right)\right)+117\right)\left(a\sin\left(fx+e\right)\right)^{\frac{13}{2}}\cos\left(fx+e\right)}{585f\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(13/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -2/585/f*(45*cos(f*x+e)^4-130*cos(f*x+e)^2+117)*(a*sin(f*x+e))^(13/2)*cos(f
*x+e)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/sin(f*x+e)^5
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{13}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(13/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(13/2)/(b*tan(f*x + e))^(3/2), x)
```

mupad [B] time = 8.60, size = 296, normalized size = 2.03

$$\left(\cos\left(7\,e+7\,f\,x\right)-\sin\left(7\,e+7\,f\,x\right)\,1{}\mathrm{i}\right)\,\sqrt{\frac{b\,\left(\sin\left(2\,e+2\,f\,x\right)-\cos\left(2\,e+2\,f\,x\right)\,1{}\mathrm{i}+1{}\mathrm{i}\right)}{\cos\left(2\,e+2\,f\,x\right)+1+\sin\left(2\,e+2\,f\,x\right)\,1{}\mathrm{i}}}\,\left(\frac{a^6\,\cos\left(3\,e+3\,f\,x\right)\,\sqrt{a\,\sin\left(e+f\,x\right)}\,\left(\cos\left(7\,e+7\,f\,x\right)-\right.}{9360\,b^2\,f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(13/2)/(b*tan(e + f*x))^(3/2),x)
```

```
[Out] ((cos(7*e + 7*f*x) - sin(7*e + 7*f*x)*1i)*((b*(sin(2*e + 2*f*x) - cos(2*e +
 2*f*x)*1i + 1i))/(cos(2*e + 2*f*x) + sin(2*e + 2*f*x)*1i + 1))^(1/2)*((a^6
*cos(3*e + 3*f*x)*(a*sin(e + f*x))^(1/2)*(cos(7*e + 7*f*x) + sin(7*e + 7*f*
x)*1i)*217i)/(9360*b^2*f) - (a^6*cos(5*e + 5*f*x)*(a*sin(e + f*x))^(1/2)*(c
os(7*e + 7*f*x) + sin(7*e + 7*f*x)*1i)*41i)/(1872*b^2*f) + (a^6*cos(7*e + 7
*f*x)*(a*sin(e + f*x))^(1/2)*(cos(7*e + 7*f*x) + sin(7*e + 7*f*x)*1i)*1i)/(
208*b^2*f) + (a^6*cos(e + f*x)*(a*sin(e + f*x))^(1/2)*(cos(7*e + 7*f*x) + s
in(7*e + 7*f*x)*1i)*1991i)/(9360*b^2*f))*1i)/(2*sin(e + f*x))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(13/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.135 $\int \frac{(a\sin(e+fx))^{9/2}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=109

$$-\frac{8a^4\sqrt{a\sin(e+fx)}}{45bf\sqrt{b\tan(e+fx)}}-\frac{2a^2(a\sin(e+fx))^{5/2}}{45bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{9/2}}{9bf\sqrt{b\tan(e+fx)}}$$

```
[Out] -2/45*a^2*(a*sin(f*x+e))^(5/2)/b/f/(b*tan(f*x+e))^(1/2)+2/9*(a*sin(f*x+e))^
(9/2)/b/f/(b*tan(f*x+e))^(1/2)-8/45*a^4*(a*sin(f*x+e))^(1/2)/b/f/(b*tan(f*x
+e))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2596, 2598, 2589}

$$-\frac{2a^2(a\sin(e+fx))^{5/2}}{45bf\sqrt{b\tan(e+fx)}}-\frac{8a^4\sqrt{a\sin(e+fx)}}{45bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{9/2}}{9bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(9/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-8*a^4*Sqrt[a*Sin[e + f*x]])/(45*b*f*Sqrt[b*Tan[e + f*x]]) - (2*a^2*(a*Sin
[e + f*x])^(5/2))/(45*b*f*Sqrt[b*Tan[e + f*x]]) + (2*(a*Sin[e + f*x])^(9/2)
)/(9*b*f*Sqrt[b*Tan[e + f*x]])
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
```

```
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\begin{aligned}\int \frac{(a\sin(e+fx))^{9/2}}{(b\tan(e+fx))^{3/2}}\,dx &= \frac{2(a\sin(e+fx))^{9/2}}{9bf\sqrt{b\tan(e+fx)}}+\frac{a^2\int(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}\,dx}{9b^2}\\ &= -\frac{2a^2(a\sin(e+fx))^{5/2}}{45bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{9/2}}{9bf\sqrt{b\tan(e+fx)}}+\frac{\left(4a^4\right)\int\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}{45b^2}\\ &= -\frac{8a^4\sqrt{a\sin(e+fx)}}{45bf\sqrt{b\tan(e+fx)}}-\frac{2a^2(a\sin(e+fx))^{5/2}}{45bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{9/2}}{9bf\sqrt{b\tan(e+fx)}}\end{aligned}$$

Mathematica [A] time = 0.22, size = 57, normalized size = 0.52

$$\frac{a^4\cos^2(e+fx)(5\cos(2(e+fx))-13)\sqrt{a\sin(e+fx)}}{45bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(9/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (a^4*Cos[e + f*x]^2*(-13 + 5*Cos[2*(e + f*x)])*Sqrt[a*Sin[e + f*x]])/(45*b*
f*Sqrt[b*Tan[e + f*x]])
```

fricas [A] time = 0.59, size = 71, normalized size = 0.65

$$\frac{2\left(5\,a^4\cos\left(fx+e\right)^5-9\,a^4\cos\left(fx+e\right)^3\right)\sqrt{a\sin\left(fx+e\right)}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}{45\,b^2f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] 2/45*(5*a^4*cos(f*x + e)^5 - 9*a^4*cos(f*x + e)^3)*sqrt(a*sin(f*x + e))*sqr
t(b*sin(f*x + e)/cos(f*x + e))/(b^2*f*sin(f*x + e))
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{9}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(9/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [A] time = 0.46, size = 60, normalized size = 0.55

$$\frac{2\left(a\sin\left(fx+e\right)\right)^{\frac{9}{2}}\left(5\left(\cos^{2}\left(fx+e\right)\right)-9\right)\cos\left(fx+e\right)}{45f\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 2/45/f*(a*sin(f*x+e))^(9/2)*(5*cos(f*x+e)^2-9)*cos(f*x+e)/(b*sin(f*x+e)/cos
(f*x+e))^(3/2)/sin(f*x+e)^3
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{9}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(9/2)/(b*tan(f*x + e))^(3/2), x)
```

mupad [B] time = 5.48, size = 94, normalized size = 0.86

$$\frac{a^4\,\sqrt{a\,\sin\left(e+f\,x\right)}\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}\,\left(47\,\sin\left(2\,e+2\,f\,x\right)+16\,\sin\left(4\,e+4\,f\,x\right)-5\,\sin\left(6\,e+6\,f\,x\right)\right)}{360\,b^2\,f\,\left(\cos\left(2\,e+2\,f\,x\right)-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(9/2)/(b*tan(e + f*x))^(3/2),x)
```

```
[Out] (a^4*(a*sin(e + f*x))^(1/2)*((b*sin(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(
1/2)*(47*sin(2*e + 2*f*x) + 16*sin(4*e + 4*f*x) - 5*sin(6*e + 6*f*x)))/(360
*b^2*f*(cos(2*e + 2*f*x) - 1))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(9/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.136 $\int \frac{(a\sin(e+fx))^{5/2}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=32

$$-\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{5/2}}$$

```
[Out] -2/5*b*(a*sin(f*x+e))^(5/2)/f/(b*tan(f*x+e))^(5/2)
```

Rubi [A] time = 0.05, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2589}

$$-\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(5/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*b*(a*Sin[e + f*x])^(5/2))/(5*f*(b*Tan[e + f*x])^(5/2))
```

Rule 2589

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m
), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n - 1, 0]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^{5/2}}{(b\tan(e+fx))^{3/2}}\,dx = -\frac{2b(a\sin(e+fx))^{5/2}}{5f(b\tan(e+fx))^{5/2}}$$

Mathematica [A] time = 0.14, size = 45, normalized size = 1.41

$$-\frac{2a^2\cos^2(e+fx)\sqrt{a\sin(e+fx)}}{5bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(5/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*a^2*Cos[e + f*x]^2*Sqrt[a*Sin[e + f*x]])/(5*b*f*Sqrt[b*Tan[e + f*x]])
```

fricas [B] time = 0.64, size = 55, normalized size = 1.72

$$-\frac{2\sqrt{a\sin\left(fx+e\right)}a^{2}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)^{3}}{5\,b^{2}f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] -2/5*sqrt(a*sin(f*x + e))*a^2*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e
)^3/(b^2*f*sin(f*x + e))
```

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

$$\int\frac{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(5/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [A] time = 0.45, size = 48, normalized size = 1.50

$$-\frac{2\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\cos\left(fx+e\right)}{5f\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -2/5/f*(a*sin(f*x+e))^(5/2)*cos(f*x+e)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/sin(
f*x+e)
```

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

$$\int\frac{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(5/2)/(b*tan(f*x + e))^(3/2), x)
```

mupad [**B**] time = 4.01, size = 81, normalized size = 2.53

$$\frac{a^2 \sqrt{a \sin\left(e+f x\right)}\ \left(2 \sin\left(2 e+2 f x\right)+\sin\left(4 e+4 f x\right)\right) \sqrt{\frac{b \sin\left(2 e+2 f x\right)}{\cos\left(2 e+2 f x\right)+1}}}{10 b^2 f\ \left(\cos\left(2 e+2 f x\right)-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(5/2)/(b*tan(e + f*x))^(3/2),x)
```

```
[Out] (a^2*(a*sin(e + f*x))^(1/2)*(2*sin(2*e + 2*f*x) + sin(4*e + 4*f*x))*((b*sin
(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(10*b^2*f*(cos(2*e + 2*f*x) -
 1))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(5/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.137 $\int \frac{\sqrt{a\sin(e+fx)}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=141

$$-\frac{a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{b^2f\sqrt{a\sin(e+fx)}}-\frac{a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{b^2f\sqrt{a\sin(e+fx)}}+$$

```
[Out] 2*(a*sin(f*x+e))^(1/2)/b/f/(b*tan(f*x+e))^(1/2)-a*arctan(cos(f*x+e)^(1/2))*
cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/b^2/f/(a*sin(f*x+e))^(1/2)-a*arctanh(
cos(f*x+e)^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/b^2/f/(a*sin(f*x+e)
)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {2595, 2601, 12, 2565, 329, 212, 206, 203}

$$-\frac{a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{b^2f\sqrt{a\sin(e+fx)}}-\frac{a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{b^2f\sqrt{a\sin(e+fx)}}+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a*Sin[e + f*x]]/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*Sqrt[a*Sin[e + f*x]])/(b*f*Sqrt[b*Tan[e + f*x]]) - (a*ArcTan[Sqrt[Cos[e
+ f*x]]]*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/(b^2*f*Sqrt[a*Sin[e + f*x
]]) - (a*ArcTanh[Sqrt[Cos[e + f*x]]]*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]
])/(b^2*f*Sqrt[a*Sin[e + f*x]])
```

Rule 12

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

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2565

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_.)*sin[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> -Dist[(a*f)^(-1), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x
, a*Cos[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&
!(IntegerQ[(m - 1)/2] && GtQ[m, 0] && LeQ[m, n])
```

Rule 2595

```
Int[Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]/((b_.)*tan[(e_.) + (f_.)*(x_)])^(3/
2), x_Symbol] :> Simp[(2*Sqrt[a*Sin[e + f*x]])/(b*f*Sqrt[b*Tan[e + f*x]]),
x] + Dist[a^2/b^2, Int[Sqrt[b*Tan[e + f*x]]/(a*Sin[e + f*x])^(3/2), x], x]
/; FreeQ[{a, b, e, f}, x]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \frac{\sqrt{a\sin(e+fx)}}{(b\tan(e+fx))^{3/2}}\,dx = \frac{2\sqrt{a\sin(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{a^2\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{3/2}}\,dx}{b^2}$$

$$= \frac{2\sqrt{a\sin(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{\left(a^2\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int \frac{\csc(e+fx)}{a\sqrt{\cos(e+fx)}}\,dx}{b^2\sqrt{a\sin(e+fx)}}$$

$$= \frac{2\sqrt{a\sin(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{\left(a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int \frac{\csc(e+fx)}{\sqrt{\cos(e+fx)}}\,dx}{b^2\sqrt{a\sin(e+fx)}}$$

$$= \frac{2\sqrt{a\sin(e+fx)}}{bf\sqrt{b\tan(e+fx)}} - \frac{\left(a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{\sqrt{x}\,(1-x^2)}\,dx, x, \cos(e+\right.}{b^2f\sqrt{a\sin(e+fx)}}$$

$$= \frac{2\sqrt{a\sin(e+fx)}}{bf\sqrt{b\tan(e+fx)}} - \frac{\left(2a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{1-x^4}\,dx, x, \sqrt{\cos(e+}\right.}{b^2f\sqrt{a\sin(e+fx)}}$$

$$= \frac{2\sqrt{a\sin(e+fx)}}{bf\sqrt{b\tan(e+fx)}} - \frac{\left(a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{1-x^2}\,dx, x, \sqrt{\cos(e+f}\right.}{b^2f\sqrt{a\sin(e+fx)}}$$

$$= \frac{2\sqrt{a\sin(e+fx)}}{bf\sqrt{b\tan(e+fx)}} - \frac{a\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}}{b^2f\sqrt{a\sin(e+fx)}} - \frac{a\tanh^{-1}}{}$$

Mathematica [A] time = 0.34, size = 88, normalized size = 0.62

$$\frac{\sqrt{a\sin(e+fx)}\left(2\sqrt[4]{\cos^2(e+fx)} - \tan^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right) - \tanh^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)\right)}{bf\sqrt[4]{\cos^2(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a*Sin[e + f*x]]/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] ((-ArcTan[(Cos[e + f*x]^2)^(1/4)] - ArcTanh[(Cos[e + f*x]^2)^(1/4)] + 2*(Co
s[e + f*x]^2)^(1/4))*Sqrt[a*Sin[e + f*x]])/(b*f*(Cos[e + f*x]^2)^(1/4)*Sqrt
[b*Tan[e + f*x]])
```

fricas [B] time = 1.12, size = 529, normalized size = 3.75

$$\left[\frac{2\,b\sqrt{-\frac{a}{b}}\,\arctan\left(\frac{2\,\sqrt{a\sin\left(fx+e\right)}\,\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{-\frac{a}{b}}\,\cos\left(fx+e\right)}{\left(a\cos\left(fx+e\right)+a\right)\sin\left(fx+e\right)}\right)\sin\left(fx+e\right)+b\sqrt{-\frac{a}{b}}\,\log\left(-\frac{a\cos\left(fx+e\right)^{3}+4\,\sqrt{a\sin\left(fx+e\right)}\,\sqrt{\frac{b\sin}{\cos}}}{\cos\left(f\right.}\right.}{4\,b^{2}f\sin}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(2*b*sqrt(-a/b)*arctan(2*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(
f*x + e))*sqrt(-a/b)*cos(f*x + e)/((a*cos(f*x + e) + a)*sin(f*x + e)))*sin(
f*x + e) + b*sqrt(-a/b)*log(-(a*cos(f*x + e)^3 + 4*sqrt(a*sin(f*x + e))*sqr
t(b*sin(f*x + e)/cos(f*x + e))*sqrt(-a/b)*cos(f*x + e)*sin(f*x + e) - 5*a*c
os(f*x + e)^2 - 5*a*cos(f*x + e) + a)/(cos(f*x + e)^3 + 3*cos(f*x + e)^2 +
3*cos(f*x + e) + 1))*sin(f*x + e) + 8*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x +
 e)/cos(f*x + e))*cos(f*x + e))/(b^2*f*sin(f*x + e)), 1/4*(2*b*sqrt(a/b)*ar
ctan(2*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(a/b)*cos
(f*x + e)/((a*cos(f*x + e) - a)*sin(f*x + e)))*sin(f*x + e) + b*sqrt(a/b)*l
og((4*(cos(f*x + e)^2 + cos(f*x + e))*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x +
 e)/cos(f*x + e))*sqrt(a/b) - (a*cos(f*x + e)^2 + 6*a*cos(f*x + e) + a)*sin
(f*x + e))/((cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sin(f*x + e)))*sin(f*x +
e) + 8*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e))
/(b^2*f*sin(f*x + e))]
```

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

$$\int \frac{\sqrt{a\sin\left(fx+e\right)}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(a*sin(f*x + e))/(b*tan(f*x + e))^(3/2), x)
```

maple [A] time = 0.54, size = 237, normalized size = 1.68

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(4\cos\left(fx+e\right)\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}+\arctan\left(\frac{1}{2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}}\right)-\ln\left(-\frac{2\sqrt{-\frac{\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}}\left(\cos^{2}\left(fx\right.\right.}{}\right.\right.}{2f\sin\left(fx+e\right)\cos\left(fx+e\right)\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/2/f*(-1+cos(f*x+e))*(4*cos(f*x+e)*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+a
rctan(1/2/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2))-ln(-(2*(-cos(f*x+e)/(1+cos(
f*x+e))^2)^(1/2)*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)
^(1/2)+2*cos(f*x+e)-1)/sin(f*x+e)^2)+4*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
)*(a*sin(f*x+e))^(1/2)/sin(f*x+e)/cos(f*x+e)/(b*sin(f*x+e)/cos(f*x+e))^(3/2
)/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
```

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

$$\int \frac{\sqrt{a\sin\left(fx+e\right)}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(f*x + e))/(b*tan(f*x + e))^(3/2), x)
```

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

$$\int \frac{\sqrt{a\,\sin\left(e+f\,x\right)}}{{\left(b\tan\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(1/2)/(b*tan(e + f*x))^(3/2),x)
```

```
[Out] int((a*sin(e + f*x))^(1/2)/(b*tan(e + f*x))^(3/2), x)
```

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

$$\int \frac{\sqrt{a\sin\left(e+fx\right)}}{\left(b\tan\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(1/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Integral(sqrt(a*sin(e + f*x))/(b*tan(e + f*x))**(3/2), x)
```

3.138 $\int \frac{1}{(a\sin(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=151

$$\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{4ab^2f\sqrt{a\sin(e+fx)}}+\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{4ab^2f\sqrt{a\sin(e+fx)}}-\frac{}{2bf}$$

```
[Out] -1/2/b/f/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2)+1/4*arctan(cos(f*x+e)^(1
/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/a/b^2/f/(a*sin(f*x+e))^(1/2)+1/4
*arctanh(cos(f*x+e)^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/a/b^2/f/(a
*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {2597, 2601, 12, 2565, 329, 212, 206, 203}

$$\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)}{4ab^2f\sqrt{a\sin(e+fx)}}+\frac{\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\sqrt{\cos(e+fx)}\right)}{4ab^2f\sqrt{a\sin(e+fx)}}-\frac{}{2bf}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a*Sin[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] -1/(2*b*f*(a*Sin[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]]) + (ArcTan[Sqrt[Cos[e
 + f*x]]]*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/(4*a*b^2*f*Sqrt[a*Sin[e
+ f*x]]) + (ArcTanh[Sqrt[Cos[e + f*x]]]*Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f
*x]])/(4*a*b^2*f*Sqrt[a*Sin[e + f*x]])
```

Rule 12

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

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2565

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_.)*sin[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> -Dist[(a*f)^(-1), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x
, a*Cos[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&
!(IntegerQ[(m - 1)/2] && GtQ[m, 0] && LeQ[m, n])
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \frac{1}{(a\sin(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}\,dx = -\frac{1}{2bf(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} - \frac{\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{3/2}}\,dx}{4b^2}$$

$$= -\frac{1}{2bf(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} - \frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+f}\right.}{4b^2\sqrt{a\sin(e+}}$$

$$= -\frac{1}{2bf(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} - \frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+f}\right.}{4ab^2\sqrt{a\sin(e-}}$$

$$= -\frac{1}{2bf(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} + \frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+f}\right.}{4ab^2}$$

$$= -\frac{1}{2bf(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} + \frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+f}\right.}{2ab^2}$$

$$= -\frac{1}{2bf(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} + \frac{\left(\sqrt{\cos(e+fx)}\sqrt{b\tan(e+f}\right.}{4ab^2}$$

$$= -\frac{1}{2bf(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} + \frac{\tan^{-1}\left(\sqrt{\cos(e+fx)}\right)\sqrt{\cos}}{4ab^2f\sqrt{a\sin}}$$

Mathematica [A] time = 0.35, size = 103, normalized size = 0.68

$$\frac{\sin^2(e+fx)\left(\tan^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)-2\sqrt[4]{\cos^2(e+fx)}\csc^2(e+fx)+\tanh^{-1}\left(\sqrt[4]{\cos^2(e+fx)}\right)\right)}{4bf\sqrt[4]{\cos^2(e+fx)}(a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a*Sin[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] ((ArcTan[(Cos[e + f*x]^2)^(1/4)] + ArcTanh[(Cos[e + f*x]^2)^(1/4)] - 2*(Cos
[e + f*x]^2)^(1/4)*Csc[e + f*x]^2)*Sin[e + f*x]^2)/(4*b*f*(Cos[e + f*x]^2)^
(1/4)*(a*Sin[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]])
```

fricas [B] time = 0.97, size = 608, normalized size = 4.03

$$\left[-\frac{2\,\sqrt{-ab}\left(\cos\left(fx+e\right)^{2}-1\right)\arctan\left(\frac{2\,\sqrt{-ab}\,\sqrt{a\sin\left(fx+e\right)}\,\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)}{\left(ab\cos\left(fx+e\right)+ab\right)\sin\left(fx+e\right)}\right)\sin\left(fx+e\right)+\sqrt{-ab}\left(\cos\left(fx+e\right)^{2}\right. \cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/16*(2*sqrt(-a*b)*(cos(f*x + e)^2 - 1)*arctan(2*sqrt(-a*b)*sqrt(a*sin(f*
x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)/((a*b*cos(f*x + e) +
 a*b)*sin(f*x + e)))*sin(f*x + e) + sqrt(-a*b)*(cos(f*x + e)^2 - 1)*log(-(a
*b*cos(f*x + e)^3 - 5*a*b*cos(f*x + e)^2 + 4*sqrt(-a*b)*sqrt(a*sin(f*x + e)
)*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 5*a*b*cos(f
*x + e) + a*b)/(cos(f*x + e)^3 + 3*cos(f*x + e)^2 + 3*cos(f*x + e) + 1))*si
n(f*x + e) - 8*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f
*x + e))/((a^2*b^2*f*cos(f*x + e)^2 - a^2*b^2*f)*sin(f*x + e)), -1/16*(2*sq
rt(a*b)*(cos(f*x + e)^2 - 1)*arctan(2*sqrt(a*b)*sqrt(a*sin(f*x + e))*sqrt(b
*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)/((a*b*cos(f*x + e) - a*b)*sin(f*x
+ e)))*sin(f*x + e) - sqrt(a*b)*(cos(f*x + e)^2 - 1)*log(-(4*sqrt(a*b)*(cos
(f*x + e)^2 + cos(f*x + e))*sqrt(a*sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*
x + e)) + (a*b*cos(f*x + e)^2 + 6*a*b*cos(f*x + e) + a*b)*sin(f*x + e))/((c
os(f*x + e)^2 - 2*cos(f*x + e) + 1)*sin(f*x + e)))*sin(f*x + e) - 8*sqrt(a*
sin(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*cos(f*x + e))/((a^2*b^2*f*c
os(f*x + e)^2 - a^2*b^2*f)*sin(f*x + e))]
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sin(f*x + e))^(3/2)*(b*tan(f*x + e))^(3/2)), x)
```

maple [B] time = 0.51, size = 320, normalized size = 2.12

$$-\frac{\left(\cos\left(fx+e\right)\ln\left(-\frac{2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}\left(\cos^2(fx+e)\right)-\left(\cos^2(fx+e)\right)-2\sqrt{-\frac{\cos(fx+e)}{(1+\cos(fx+e))^2}}+2\cos(fx+e)-1}{\sin(fx+e)^2}\right)-\cos\left(fx+e\right)\arctan\left(\cdots\right.\right.}{8f\cos\left(fx\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/8/f*(cos(f*x+e)*ln(-(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)*cos(f*x+e)^2
-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x+e)-1)/sin(f*
x+e)^2)-cos(f*x+e)*arctan(1/2/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2))+4*(-cos
(f*x+e)/(1+cos(f*x+e))^2)^(1/2)-ln(-(2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
*cos(f*x+e)^2-cos(f*x+e)^2-2*(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)+2*cos(f*x
+e)-1)/sin(f*x+e)^2)+arctan(1/2/(-cos(f*x+e)/(1+cos(f*x+e))^2)^(1/2)))*sin(
f*x+e)/cos(f*x+e)/(a*sin(f*x+e))^(3/2)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/(-co
s(f*x+e)/(1+cos(f*x+e))^2)^(1/2)
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((a*sin(f*x + e))^(3/2)*(b*tan(f*x + e))^(3/2)), x)
```

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

$$\int \frac{1}{\left(a\,\sin\left(e+f\,x\right)\right)^{3/2}\,\left(b\tan\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^(3/2)), x)
```

<u>**sympy**</u> **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))**(3/2)/(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.139 $\int \frac{(a\sin(e+fx))^{11/2}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=167

$$\frac{8a^6\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{77b^2f\sqrt{a\sin(e+fx)}}-\frac{4a^4(a\sin(e+fx))^{3/2}}{77bf\sqrt{b\tan(e+fx)}}-\frac{2a^2(a\sin(e+fx))^{7/2}}{77bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))}{11bf\sqrt{b\tan(e+}}$$

```
[Out] -4/77*a^4*(a*sin(f*x+e))^(3/2)/b/f/(b*tan(f*x+e))^(1/2)-2/77*a^2*(a*sin(f*x
+e))^(7/2)/b/f/(b*tan(f*x+e))^(1/2)+2/11*(a*sin(f*x+e))^(11/2)/b/f/(b*tan(f
*x+e))^(1/2)+8/77*a^6*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*Ellip
ticF(sin(1/2*e+1/2*f*x),2^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/b^2/
f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2596, 2598, 2601, 2641}

$$\frac{8a^6\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{77b^2f\sqrt{a\sin(e+fx)}}-\frac{4a^4(a\sin(e+fx))^{3/2}}{77bf\sqrt{b\tan(e+fx)}}-\frac{2a^2(a\sin(e+fx))^{7/2}}{77bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))}{11bf\sqrt{b\tan(e+}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(11/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-4*a^4*(a*Sin[e + f*x])^(3/2))/(77*b*f*Sqrt[b*Tan[e + f*x]]) - (2*a^2*(a*S
in[e + f*x])^(7/2))/(77*b*f*Sqrt[b*Tan[e + f*x]]) + (2*(a*Sin[e + f*x])^(11
/2))/(11*b*f*Sqrt[b*Tan[e + f*x]]) + (8*a^6*Sqrt[Cos[e + f*x]]*EllipticF[(e
 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(77*b^2*f*Sqrt[a*Sin[e + f*x]])
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
```

```
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^{11/2}}{(b\tan(e+fx))^{3/2}}\,dx = \frac{2(a\sin(e+fx))^{11/2}}{11bf\sqrt{b\tan(e+fx)}} + \frac{a^2\int (a\sin(e+fx))^{7/2}\sqrt{b\tan(e+fx)}\,dx}{11b^2}$$

$$= -\frac{2a^2(a\sin(e+fx))^{7/2}}{77bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{11/2}}{11bf\sqrt{b\tan(e+fx)}} + \frac{\left(6a^4\right)\int (a\sin(e+fx))^{3/2}\sqrt{b\tan(e+\ldots}{77b^2}$$

$$= -\frac{4a^4(a\sin(e+fx))^{3/2}}{77bf\sqrt{b\tan(e+fx)}} - \frac{2a^2(a\sin(e+fx))^{7/2}}{77bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{11/2}}{11bf\sqrt{b\tan(e+fx)}} + \frac{\left(4a^6\right)\int \frac{\sqrt{b\ldots}}{\sqrt{a\ldots}}}{77\ldots}$$

$$= -\frac{4a^4(a\sin(e+fx))^{3/2}}{77bf\sqrt{b\tan(e+fx)}} - \frac{2a^2(a\sin(e+fx))^{7/2}}{77bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{11/2}}{11bf\sqrt{b\tan(e+fx)}} + \frac{\left(4a^6\sqrt{\cos(e\ldots}\right.}{\ldots}$$

$$= -\frac{4a^4(a\sin(e+fx))^{3/2}}{77bf\sqrt{b\tan(e+fx)}} - \frac{2a^2(a\sin(e+fx))^{7/2}}{77bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{11/2}}{11bf\sqrt{b\tan(e+fx)}} + \frac{8a^6\sqrt{\cos(e\ldots}}{\ldots}$$

Mathematica [A] time = 0.77, size = 118, normalized size = 0.71

$$\frac{a^5\tan^2(e+fx)\sqrt{a\sin(e+fx)}\left(\sqrt[4]{\cos^2(e+fx)}\,(-22\cos(e+fx)-17\cos(3(e+fx))+7\cos(5(e+fx)))+64\,\text{co}\ldots\right.}{616f\sqrt[4]{\cos^2(e+fx)}\,(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(11/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (a^5*((Cos[e + f*x]^2)^(1/4)*(-22*Cos[e + f*x] - 17*Cos[3*(e + f*x)] + 7*Co
s[5*(e + f*x)]) + 64*Cot[e + f*x]*EllipticF[ArcSin[Sin[e + f*x]]/2, 2])*Sqr
t[a*Sin[e + f*x]]*Tan[e + f*x]^2)/(616*f*(Cos[e + f*x]^2)^(1/4)*(b*Tan[e +
f*x])^(3/2))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^5\cos\left(fx+e\right)^4-2\,a^5\cos\left(fx+e\right)^2+a^5\right)\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}\,\sin\left(fx+e\right)}{b^2\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(11/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral((a^5*cos(f*x + e)^4 - 2*a^5*cos(f*x + e)^2 + a^5)*sqrt(a*sin(f*x +
 e))*sqrt(b*tan(f*x + e))*sin(f*x + e)/(b^2*tan(f*x + e)^2), x)
```

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

$$\int\frac{\left(a\sin\left(fx+e\right)\right)^{\frac{11}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(11/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(11/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.58, size = 181, normalized size = 1.08

$$-\frac{2\left(-7\left(\cos^6\left(fx+e\right)\right)+4i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\;\text{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)+7\left(\cos^5\left(fx+e\right.\right.\right.}{77f\left(-1+\cos\left(fx+e\right)\right)\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(11/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -2/77/f*(-7*cos(f*x+e)^6+4*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)+7*cos(f*x
+e)^5+13*cos(f*x+e)^4-13*cos(f*x+e)^3-4*cos(f*x+e)^2+4*cos(f*x+e))*(a*sin(f
```

```
*x+e))^(11/2)/(-1+cos(f*x+e))/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/sin(f*x+e)^3/
cos(f*x+e)^2
```

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

$$\int \frac{(a\sin(fx+e))^{\frac{11}{2}}}{(b\tan(fx+e))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(11/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^(11/2)/(b*tan(f*x + e))^(3/2), x)
```

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

$$\int \frac{\left(a\,\sin\left(e+f\,x\right)\right)^{11/2}}{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(11/2)/(b*tan(e + f*x))^(3/2),x)
[Out] int((a*sin(e + f*x))^(11/2)/(b*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(11/2)/(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.140 $\int \frac{(a\sin(e+fx))^{7/2}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=130

$$\frac{4a^4\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{21b^2f\sqrt{a\sin(e+fx)}}-\frac{2a^2(a\sin(e+fx))^{3/2}}{21bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{7/2}}{7bf\sqrt{b\tan(e+fx)}}$$

```
[Out] -2/21*a^2*(a*sin(f*x+e))^(3/2)/b/f/(b*tan(f*x+e))^(1/2)+2/7*(a*sin(f*x+e))^
(7/2)/b/f/(b*tan(f*x+e))^(1/2)+4/21*a^4*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/
2*e+1/2*f*x)*EllipticF(sin(1/2*e+1/2*f*x),2^(1/2))*cos(f*x+e)^(1/2)*(b*tan(
f*x+e))^(1/2)/b^2/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2596, 2598, 2601, 2641}

$$\frac{4a^4\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{21b^2f\sqrt{a\sin(e+fx)}}-\frac{2a^2(a\sin(e+fx))^{3/2}}{21bf\sqrt{b\tan(e+fx)}}+\frac{2(a\sin(e+fx))^{7/2}}{7bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(7/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*a^2*(a*Sin[e + f*x])^(3/2))/(21*b*f*Sqrt[b*Tan[e + f*x]]) + (2*(a*Sin[e
 + f*x])^(7/2))/(7*b*f*Sqrt[b*Tan[e + f*x]]) + (4*a^4*Sqrt[Cos[e + f*x]]*El
lipticF[(e + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(21*b^2*f*Sqrt[a*Sin[e + f*x]
])
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2598

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[(b*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f
*m), x] + Dist[(a^2*(m + n - 1))/m, Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
 f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (GtQ[m, 1] || (EqQ[m, 1] &
```

```
& EqQ[n, 1/2])) && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^{7/2}}{(b\tan(e+fx))^{3/2}}\,dx = \frac{2(a\sin(e+fx))^{7/2}}{7bf\sqrt{b\tan(e+fx)}} + \frac{a^2\int (a\sin(e+fx))^{3/2}\sqrt{b\tan(e+fx)}\,dx}{7b^2}$$

$$= -\frac{2a^2(a\sin(e+fx))^{3/2}}{21bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{7/2}}{7bf\sqrt{b\tan(e+fx)}} + \frac{\left(2a^4\right)\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{a\sin(e+fx)}}\,dx}{21b^2}$$

$$= -\frac{2a^2(a\sin(e+fx))^{3/2}}{21bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{7/2}}{7bf\sqrt{b\tan(e+fx)}} + \frac{\left(2a^4\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int}{21b^2\sqrt{a\sin(e+fx)}}$$

$$= -\frac{2a^2(a\sin(e+fx))^{3/2}}{21bf\sqrt{b\tan(e+fx)}} + \frac{2(a\sin(e+fx))^{7/2}}{7bf\sqrt{b\tan(e+fx)}} + \frac{4a^4\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b}}{21b^2f\sqrt{a\sin(e+fx)}}$$

Mathematica [A] time = 0.37, size = 97, normalized size = 0.75

$$\frac{a^3\sqrt{a\sin(e+fx)}\left((5\sin(e+fx)-3\sin(3(e+fx)))\sqrt[4]{\cos^2(e+fx)}+8F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)\right)}{42bf\sqrt[4]{\cos^2(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(7/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (a^3*Sqrt[a*Sin[e + f*x]]*(8*EllipticF[ArcSin[Sin[e + f*x]]/2, 2] + (Cos[e
+ f*x]^2)^(1/4)*(5*Sin[e + f*x] - 3*Sin[3*(e + f*x)])))/(42*b*f*(Cos[e + f*
x]^2)^(1/4)*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(a^3\cos\left(fx+e\right)^2-a^3\right)\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\sin\left(fx+e\right)}{b^2\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(a^3*cos(f*x + e)^2 - a^3)*sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x +
e))*sin(f*x + e)/(b^2*tan(f*x + e)^2), x)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{7}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(7/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.52, size = 161, normalized size = 1.24

$$-\frac{2\left(2i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)+3\left(\cos^4\left(fx+e\right)\right)-3\left(\cos^3\left(fx+e\right)\right)}{21f\left(-1+\cos\left(fx+e\right)\right)\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)\cos\left(fx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -2/21/f*(2*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ell
ipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)+3*cos(f*x+e)^4-3*cos(f*x+
e)^3-2*cos(f*x+e)^2+2*cos(f*x+e))*(a*sin(f*x+e))^(7/2)/(-1+cos(f*x+e))/(b*s
in(f*x+e)/cos(f*x+e))^(3/2)/sin(f*x+e)/cos(f*x+e)^2
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{7}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(7/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^(7/2)/(b*tan(f*x + e))^(3/2), x)
```

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

$$\int \frac{\left(a\,\sin\left(e+f\,x\right)\right)^{7/2}}{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(7/2)/(b*tan(e + f*x))^(3/2),x)
[Out] int((a*sin(e + f*x))^(7/2)/(b*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(7/2)/(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.141 $\int \frac{(a\sin(e+fx))^{3/2}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=93

$$\frac{2a^2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{3b^2f\sqrt{a\sin(e+fx)}}+\frac{2(a\sin(e+fx))^{3/2}}{3bf\sqrt{b\tan(e+fx)}}$$

```
[Out] 2/3*(a*sin(f*x+e))^(3/2)/b/f/(b*tan(f*x+e))^(1/2)+2/3*a^2*(cos(1/2*e+1/2*f*
x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticF(sin(1/2*e+1/2*f*x),2^(1/2))*cos(f*
x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/b^2/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2596, 2601, 2641}

$$\frac{2a^2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{3b^2f\sqrt{a\sin(e+fx)}}+\frac{2(a\sin(e+fx))^{3/2}}{3bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(3/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*(a*Sin[e + f*x])^(3/2))/(3*b*f*Sqrt[b*Tan[e + f*x]]) + (2*a^2*Sqrt[Cos[e
 + f*x]]*EllipticF[(e + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(3*b^2*f*Sqrt[a*Si
n[e + f*x]])
```

Rule 2596

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m)
, x] - Dist[(a^2*(n + 1))/(b^2*m), Int[(a*Sin[e + f*x])^(m - 2)*(b*Tan[e +
f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
&& IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{(a\sin(e+fx))^{3/2}}{(b\tan(e+fx))^{3/2}}\,dx &= \frac{2(a\sin(e+fx))^{3/2}}{3bf\sqrt{b\tan(e+fx)}}+\frac{a^2\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{a\sin(e+fx)}}\,dx}{3b^2}\\ &= \frac{2(a\sin(e+fx))^{3/2}}{3bf\sqrt{b\tan(e+fx)}}+\frac{\left(a^2\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int \frac{1}{\sqrt{\cos(e+fx)}}\,dx}{3b^2\sqrt{a\sin(e+fx)}}\\ &= \frac{2(a\sin(e+fx))^{3/2}}{3bf\sqrt{b\tan(e+fx)}}+\frac{2a^2\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{3b^2f\sqrt{a\sin(e+fx)}}\end{aligned}$$

Mathematica [A] time = 0.23, size = 80, normalized size = 0.86

$$\frac{2a\sqrt{a\sin(e+fx)}\left(\sin(e+fx)\sqrt[4]{\cos^2(e+fx)}+F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)\right)}{3bf\sqrt[4]{\cos^2(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^(3/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*a*Sqrt[a*Sin[e + f*x]]*(EllipticF[ArcSin[Sin[e + f*x]]/2, 2] + (Cos[e +
f*x]^2)^(1/4)*Sin[e + f*x]))/(3*b*f*(Cos[e + f*x]^2)^(1/4)*Sqrt[b*Tan[e + f
*x]])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}a\sin\left(fx+e\right)}{b^2\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))*a*sin(f*x + e)/(b^2*tan(
f*x + e)^2), x)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(3/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.48, size = 137, normalized size = 1.47

$$-\frac{2\sin\left(fx+e\right)\left(i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)-\left(\cos^2\left(fx+e\right)\right)+\cos\left(f\right.\right.}{3f\left(-1+\cos\left(fx+e\right)\right)\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\cos\left(fx+e\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -2/3/f*sin(f*x+e)*(I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)-cos(f*x+e)^2+cos(
f*x+e))*(a*sin(f*x+e))^(3/2)/(-1+cos(f*x+e))/(b*sin(f*x+e)/cos(f*x+e))^(3/2
)/cos(f*x+e)^2
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^(3/2)/(b*tan(f*x + e))^(3/2), x)
```

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

$$\int \frac{{\left(a\,\sin\left(e+f\,x\right)\right)}^{3/2}}{{\left(b\,\tan\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(3/2)/(b*tan(e + f*x))^(3/2),x)
```

```
[Out] int((a*sin(e + f*x))^(3/2)/(b*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(3/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.142 $\int \frac{1}{\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=86

$$-\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{b^2f\sqrt{a\sin(e+fx)}}-\frac{1}{bf\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

```
[Out] -1/b/f/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2)-(cos(1/2*e+1/2*f*x)^2)^(1/
2)/cos(1/2*e+1/2*f*x)*EllipticF(sin(1/2*e+1/2*f*x),2^(1/2))*cos(f*x+e)^(1/2
)*(b*tan(f*x+e))^(1/2)/b^2/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2597, 2601, 2641}

$$-\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{b^2f\sqrt{a\sin(e+fx)}}-\frac{1}{bf\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] -(1/(b*f*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]])) - (Sqrt[Cos[e + f*x]]*
EllipticF[(e + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(b^2*f*Sqrt[a*Sin[e + f*x]]
)
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^{3/2}}\,dx = -\frac{1}{bf\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}} - \frac{\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{a\sin(e+fx)}}\,dx}{2b^2}$$

$$= -\frac{1}{bf\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}} - \frac{\left(\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}\right)}{2b^2\sqrt{a\sin(e+fx}}$$

$$= -\frac{1}{bf\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}} - \frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)}{b^2f\sqrt{a\sin(e+fx}}$$

Mathematica [A] time = 0.19, size = 79, normalized size = 0.92

$$\frac{\sin(e+fx)\left(-F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)\right)-\sqrt[4]{\cos^2(e+fx)}}{bf\sqrt[4]{\cos^2(e+fx)}\,\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] (-(Cos[e + f*x]^2)^(1/4) - EllipticF[ArcSin[Sin[e + f*x]]/2, 2]*Sin[e + f*x
])/(b*f*(Cos[e + f*x]^2)^(1/4)*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}}{ab^2\sin\left(fx+e\right)\tan\left(fx+e\right)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))/(a*b^2*sin(f*x + e)*tan(
f*x + e)^2), x)
```

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

$$\int \frac{1}{\sqrt{a\sin\left(fx+e\right)}\,\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^(3/2)), x)
```

maple [C] time = 0.56, size = 185, normalized size = 2.15

$$-\frac{\left(i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}, i\right)\sin\left(fx+e\right)\cos\left(fx+e\right)+i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\right.}{f\sqrt{a\sin\left(fx+e\right)}\,\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\cos\left(fx+e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/f*(I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Elliptic
F(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)+I*(1/(1+cos(f*x+e))
)^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f
*x+e),I)*sin(f*x+e)+cos(f*x+e))*sin(f*x+e)/(a*sin(f*x+e))^(1/2)/(b*sin(f*x+
e)/cos(f*x+e))^(3/2)/cos(f*x+e)^2
```

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

$$\int \frac{1}{\sqrt{a\sin\left(fx+e\right)}\,\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^(3/2)), x)
```

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

$$\int \frac{1}{\sqrt{a\,\sin\left(e+f\,x\right)}\,{\left(b\tan\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^(3/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))**(1/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.143 $\displaystyle\int \frac{1}{(a\sin(e+fx))^{5/2}(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{6a^2b^2f\sqrt{a\sin(e+fx)}}+\frac{1}{6a^2bf\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{1}{3bf(a\sin(e+fx))^{5/2}\sqrt{b}}$$

```
[Out] -1/3/b/f/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2)+1/6/a^2/b/f/(a*sin(f*x+e
))^(1/2)/(b*tan(f*x+e))^(1/2)-1/6*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/
2*f*x)*EllipticF(sin(1/2*e+1/2*f*x),2^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e)
)^(1/2)/a^2/b^2/f/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2597, 2599, 2601, 2641}

$$-\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{6a^2b^2f\sqrt{a\sin(e+fx)}}+\frac{1}{6a^2bf\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}-\frac{1}{3bf(a\sin(e+fx))^{5/2}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a*Sin[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] -1/(3*b*f*(a*Sin[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]]) + 1/(6*a^2*b*f*Sqrt[
a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]]) - (Sqrt[Cos[e + f*x]]*EllipticF[(e +
f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(6*a^2*b^2*f*Sqrt[a*Sin[e + f*x]])
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{1}{(a\sin(e+fx))^{5/2}(b\tan(e+fx))^{3/2}}\,dx = -\frac{1}{3bf(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} - \frac{\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{5/2}}\,dx}{6b^2}$$

$$= -\frac{1}{3bf(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} + \frac{1}{6a^2bf\sqrt{a\sin(e+fx)}\,\sqrt{b\,\mathrm{ta}}}$$

$$= -\frac{1}{3bf(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} + \frac{1}{6a^2bf\sqrt{a\sin(e+fx)}\,\sqrt{b\,\mathrm{ta}}}$$

$$= -\frac{1}{3bf(a\sin(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} + \frac{1}{6a^2bf\sqrt{a\sin(e+fx)}\,\sqrt{b\,\mathrm{ta}}}$$

Mathematica [A] time = 0.37, size = 96, normalized size = 0.74

$$\frac{\sqrt[4]{\cos^2(e+fx)}\left(1-2\csc^2(e+fx)\right)-\sin(e+fx)F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)}{6a^2bf\sqrt[4]{\cos^2(e+fx)}\,\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a*Sin[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] ((Cos[e + f*x]^2)^(1/4)*(1 - 2*Csc[e + f*x]^2) - EllipticF[ArcSin[Sin[e + f
*x]]/2, 2]*Sin[e + f*x])/(6*a^2*b*f*(Cos[e + f*x]^2)^(1/4)*Sqrt[a*Sin[e + f
*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{\left(a^3b^2\cos\left(fx+e\right)^2-a^3b^2\right)\sin\left(fx+e\right)\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(-sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))/((a^3*b^2*cos(f*x + e)^
2 - a^3*b^2)*sin(f*x + e)*tan(f*x + e)^2), x)
```

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

$$\int\frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sin(f*x + e))^(5/2)*(b*tan(f*x + e))^(3/2)), x)
```

maple [C] time = 0.53, size = 337, normalized size = 2.59

$$\left(i\sin\left(fx+e\right)\left(\cos^3\left(fx+e\right)\right)\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \text{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)+i\sin\left(fx+e\right)\left(\cos^2\left(fx\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/6/f*(I*sin(f*x+e)*cos(f*x+e)^3*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)+I*sin(f*x+e)*cos
(f*x+e)^2*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ellipt
icF(I*(-1+cos(f*x+e))/sin(f*x+e),I)-I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*
cos(f*x+e)-I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ell
ipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)-cos(f*x+e)^3-cos(f*x+e))*
```

```
sin(f*x+e)/(a*sin(f*x+e))^(5/2)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/cos(f*x+e)^
2
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{5}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((a*sin(f*x + e))^(5/2)*(b*tan(f*x + e))^(3/2)), x)
```

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

$$\int \frac{1}{{\left(a\,\sin\left(e+f\,x\right)\right)}^{5/2}\,{\left(b\,\tan\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*sin(e + f*x))^(5/2)*(b*tan(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((a*sin(e + f*x))^(5/2)*(b*tan(e + f*x))^(3/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))**(5/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.144 $\int \frac{1}{(a\sin(e+fx))^{9/2}(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=167

$$-\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{12a^4b^2f\sqrt{a\sin(e+fx)}}+\frac{1}{12a^4bf\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}+\frac{1}{30a^2bf(a\sin(e+fx))^{5/}}$$

```
[Out] -1/5/b/f/(a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(1/2)+1/30/a^2/b/f/(a*sin(f*x+
e))^(5/2)/(b*tan(f*x+e))^(1/2)+1/12/a^4/b/f/(a*sin(f*x+e))^(1/2)/(b*tan(f*x
+e))^(1/2)-1/12*(cos(1/2*e+1/2*f*x)^2)^(1/2)/cos(1/2*e+1/2*f*x)*EllipticF(s
in(1/2*e+1/2*f*x),2^(1/2))*cos(f*x+e)^(1/2)*(b*tan(f*x+e))^(1/2)/a^4/b^2/f/
(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2597, 2599, 2601, 2641}

$$-\frac{\sqrt{\cos(e+fx)}\,F\left(\frac{1}{2}(e+fx)\middle|2\right)\sqrt{b\tan(e+fx)}}{12a^4b^2f\sqrt{a\sin(e+fx)}}+\frac{1}{12a^4bf\sqrt{a\sin(e+fx)}\,\sqrt{b\tan(e+fx)}}+\frac{1}{30a^2bf(a\sin(e+fx))^{5/}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a*Sin[e + f*x])^(9/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] -1/(5*b*f*(a*Sin[e + f*x])^(9/2)*Sqrt[b*Tan[e + f*x]]) + 1/(30*a^2*b*f*(a*S
in[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]]) + 1/(12*a^4*b*f*Sqrt[a*Sin[e + f*x
]]*Sqrt[b*Tan[e + f*x]]) - (Sqrt[Cos[e + f*x]]*EllipticF[(e + f*x)/2, 2]*Sq
rt[b*Tan[e + f*x]])/(12*a^4*b^2*f*Sqrt[a*Sin[e + f*x]])
```

Rule 2597

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
m + n + 1)), x] - Dist[(n + 1)/(b^2*(m + n + 1)), Int[(a*Sin[e + f*x])^m*(b
*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] &
& NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n] &&  !(EqQ[n, -3/2] && EqQ[m, 1])
```

Rule 2599

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_.), x_Symbol] :> Simp[(b*(a*Sin[e + f*x])^(m + 2)*(b*Tan[e + f*x])^(n - 1)
)/(a^2*f*(m + n + 1)), x] + Dist[(m + 2)/(a^2*(m + n + 1)), Int[(a*Sin[e +
f*x])^(m + 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && Lt
```

```
Q[m, -1] && NeQ[m + n + 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(a\sin(e+fx))^{9/2}(b\tan(e+fx))^{3/2}}\,dx &= -\frac{1}{5bf(a\sin(e+fx))^{9/2}\sqrt{b\tan(e+fx)}} - \frac{\int \frac{\sqrt{b\tan(e+fx)}}{(a\sin(e+fx))^{9/2}}\,dx}{10b^2}\\ &= -\frac{1}{5bf(a\sin(e+fx))^{9/2}\sqrt{b\tan(e+fx)}} + \frac{1}{30a^2bf(a\sin(e+fx))^{5/2}\sqrt{}}\\ &= -\frac{1}{5bf(a\sin(e+fx))^{9/2}\sqrt{b\tan(e+fx)}} + \frac{1}{30a^2bf(a\sin(e+fx))^{5/2}\sqrt{}}\\ &= -\frac{1}{5bf(a\sin(e+fx))^{9/2}\sqrt{b\tan(e+fx)}} + \frac{1}{30a^2bf(a\sin(e+fx))^{5/2}\sqrt{}}\\ &= -\frac{1}{5bf(a\sin(e+fx))^{9/2}\sqrt{b\tan(e+fx)}} + \frac{1}{30a^2bf(a\sin(e+fx))^{5/2}\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.41, size = 106, normalized size = 0.63

$$\frac{\sqrt[4]{\cos^2(e+fx)}\left(-12\csc^4(e+fx)+2\csc^2(e+fx)+5\right)-5\sin(e+fx)F\left(\frac{1}{2}\sin^{-1}(\sin(e+fx))\middle|2\right)}{60a^4bf\sqrt[4]{\cos^2(e+fx)}\sqrt{a\sin(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a*Sin[e + f*x])^(9/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] ((Cos[e + f*x]^2)^(1/4)*(5 + 2*Csc[e + f*x]^2 - 12*Csc[e + f*x]^4) - 5*Elli
pticF[ArcSin[Sin[e + f*x]]/2, 2]*Sin[e + f*x])/(60*a^4*b*f*(Cos[e + f*x]^2)
^(1/4)*Sqrt[a*Sin[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sin\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}}{\left(a^5b^2\cos\left(fx+e\right)^4-2\,a^5b^2\cos\left(fx+e\right)^2+a^5b^2\right)\sin\left(fx+e\right)\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(a*sin(f*x + e))*sqrt(b*tan(f*x + e))/((a^5*b^2*cos(f*x + e)^4
 - 2*a^5*b^2*cos(f*x + e)^2 + a^5*b^2)*sin(f*x + e)*tan(f*x + e)^2), x)
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{9}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sin(f*x + e))^(9/2)*(b*tan(f*x + e))^(3/2)), x)
```

maple [C] time = 0.60, size = 487, normalized size = 2.92

$$-\frac{\left(5i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\text{EllipticF}\left(\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)},i\right)\sin\left(fx+e\right)\left(\cos^5\left(fx+e\right)\right)+5i\sqrt{\frac{1}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos}{1+\cos}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/60/f*(5*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*Ell
ipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)^5+5*I*(1/(1+co
s(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+
```

```
e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)^4-10*I*sin(f*x+e)*cos(f*x+e)^3*(1/(
1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(
f*x+e))/sin(f*x+e),I)-10*I*sin(f*x+e)*cos(f*x+e)^2*(1/(1+cos(f*x+e)))^(1/2)
*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f*x+e),I
)+5*I*(1/(1+cos(f*x+e)))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(
I*(-1+cos(f*x+e))/sin(f*x+e),I)*sin(f*x+e)*cos(f*x+e)+5*I*(1/(1+cos(f*x+e))
)^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*EllipticF(I*(-1+cos(f*x+e))/sin(f
*x+e),I)*sin(f*x+e)-5*cos(f*x+e)^5+12*cos(f*x+e)^3+5*cos(f*x+e))*sin(f*x+e)
/(a*sin(f*x+e))^(9/2)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/cos(f*x+e)^2
```

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

$$\int \frac{1}{\left(a\sin\left(fx+e\right)\right)^{\frac{9}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))^(9/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((a*sin(f*x + e))^(9/2)*(b*tan(f*x + e))^(3/2)), x)
```

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

$$\int \frac{1}{{\left(a\,\sin\left(e+f\,x\right)\right)}^{9/2}\,{\left(b\,\tan\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*sin(e + f*x))^(9/2)*(b*tan(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((a*sin(e + f*x))^(9/2)*(b*tan(e + f*x))^(3/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*sin(f*x+e))**(9/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.145 $\int (b\sin(e+fx))^{4/3}\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{3/4}(b\sin(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

```
[Out] 6/17*(cos(f*x+e)^2)^(3/4)*hypergeom([3/4, 17/12],[29/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.10, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{3/4}(b\sin(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(4/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(3/4)*Hypergeometric2F1[3/4, 17/12, 29/12, Sin[e + f*x]
^2]*(b*Sin[e + f*x])^(4/3)*(d*Tan[e + f*x])^(3/2))/(17*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int (b\sin(e+fx))^{4/3}\sqrt{d\tan(e+fx)}\,dx = \frac{\left(b\cos^{\frac{3}{2}}(e+fx)(d\tan(e+fx))^{3/2}\right)\int \frac{(b\sin(e+fx))^{11/6}}{\sqrt{\cos(e+fx)}}\,dx}{d(b\sin(e+fx))^{3/2}}$$
$$= \frac{6\cos^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{3}{4},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)(b\sin(e+fx))^{4/3}(d\tan(e}{17df}$$

Mathematica [**A**] time = 0.40, size = 69, normalized size = 1.08

$$\frac{3\sin(2(e+fx))(b\sin(e+fx))^{4/3}\sqrt{d\tan(e+fx)}\,{}_2F_1\left(\frac{3}{4},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17f\sqrt[4]{\cos^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(4/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (3*Hypergeometric2F1[3/4, 17/12, 29/12, Sin[e + f*x]^2]*(b*Sin[e + f*x])^(4
/3)*Sin[2*(e + f*x)]*Sqrt[d*Tan[e + f*x]])/(17*f*(Cos[e + f*x]^2)^(1/4))
```

fricas [**F**] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,b\sin\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b*sin(f*x + e))^(1/3)*sqrt(d*tan(f*x + e))*b*sin(f*x + e), x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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ation time: 7.05Done
```

maple [F] time = 0.71, size = 0, normalized size = 0.00

$$\int \left(b \sin \left(f x+e\right)\right)^{\frac{4}{3}} \sqrt{d \tan \left(f x+e\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] int((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x)
```

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

$$\int \left(b \sin \left(f x+e\right)\right)^{\frac{4}{3}} \sqrt{d \tan \left(f x+e\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*sin(f*x + e))^(4/3)*sqrt(d*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(b\,\sin\left(e+f\,x\right)\right)}^{4/3}\,\sqrt{d\,\tan\left(e+f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(4/3)*(d*tan(e + f*x))^(1/2),x)
```

```
[Out] int((b*sin(e + f*x))^(4/3)*(d*tan(e + f*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(4/3)*(d*tan(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.146 $\int \sqrt[3]{b \sin(e+fx)}\,\sqrt{d \tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{3/4}\sqrt[3]{b\sin(e+fx)}\,(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{11}{12};\frac{23}{12};\sin^2(e+fx)\right)}{11df}$$

```
[Out] 6/11*(cos(f*x+e)^2)^(3/4)*hypergeom([3/4, 11/12],[23/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{3/4}\sqrt[3]{b\sin(e+fx)}\,(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{11}{12};\frac{23}{12};\sin^2(e+fx)\right)}{11df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(1/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(3/4)*Hypergeometric2F1[3/4, 11/12, 23/12, Sin[e + f*x]
^2]*(b*Sin[e + f*x])^(1/3)*(d*Tan[e + f*x])^(3/2))/(11*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \sqrt[3]{b\sin(e+fx)}\,\sqrt{d\tan(e+fx)}\,dx = \frac{\left(b\cos^{\frac{3}{2}}(e+fx)(d\tan(e+fx))^{3/2}\right)\int\frac{(b\sin(e+fx))^{5/6}}{\sqrt{\cos(e+fx)}}\,dx}{d(b\sin(e+fx))^{3/2}}$$
$$= \frac{6\cos^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{3}{4},\frac{11}{12};\frac{23}{12};\sin^2(e+fx)\right)\sqrt[3]{b\sin(e+fx)}\,(d\tan(e+f$$
$$11df$$

Mathematica [**A**] time = 0.35, size = 69, normalized size = 1.08

$$\frac{3\sin(2(e+fx))\sqrt[3]{b\sin(e+fx)}\,\sqrt{d\tan(e+fx)}\,{}_2F_1\left(\frac{3}{4},\frac{11}{12};\frac{23}{12};\sin^2(e+fx)\right)}{11f\sqrt[4]{\cos^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(1/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (3*Hypergeometric2F1[3/4, 11/12, 23/12, Sin[e + f*x]^2]*(b*Sin[e + f*x])^(1
/3)*Sin[2*(e + f*x)]*Sqrt[d*Tan[e + f*x]])/(11*f*(Cos[e + f*x]^2)^(1/4))
```

fricas [**F**] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b*sin(f*x + e))^(1/3)*sqrt(d*tan(f*x + e)), x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
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```

maple [F] time = 0.51, size = 0, normalized size = 0.00

$$\int \left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x)
[Out] int((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x)
```

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

$$\int \left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((b*sin(f*x + e))^(1/3)*sqrt(d*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(b\,\sin\left(e+f\,x\right)\right)}^{1/3}\,\sqrt{d\,\tan\left(e+f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(1/3)*(d*tan(e + f*x))^(1/2),x)
[Out] int((b*sin(e + f*x))^(1/3)*(d*tan(e + f*x))^(1/2), x)
```

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

$$\int \sqrt[3]{b \sin \left(e + f x\right)} \sqrt{d \tan \left(e + f x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(1/3)*(d*tan(f*x+e))**(1/2),x)
[Out] Integral((b*sin(e + f*x))**(1/3)*sqrt(d*tan(e + f*x)), x)
```

3.147 $\int \frac{\sqrt{d\tan(e+fx)}}{\sqrt[3]{b\sin(e+fx)}}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{3/4}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{7}{12},\frac{3}{4};\frac{19}{12};\sin^2(e+fx)\right)}{7df\sqrt[3]{b\sin(e+fx)}}$$

```
[Out] 6/7*(cos(f*x+e)^2)^(3/4)*hypergeom([7/12, 3/4],[19/12],sin(f*x+e)^2)*(d*tan
(f*x+e))^(3/2)/d/f/(b*sin(f*x+e))^(1/3)
```

Rubi [A] time = 0.08, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{3/4}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{7}{12},\frac{3}{4};\frac{19}{12};\sin^2(e+fx)\right)}{7df\sqrt[3]{b\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Tan[e + f*x]]/(b*Sin[e + f*x])^(1/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(3/4)*Hypergeometric2F1[7/12, 3/4, 19/12, Sin[e + f*x]^
2]*(d*Tan[e + f*x])^(3/2))/(7*d*f*(b*Sin[e + f*x])^(1/3))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \frac{\sqrt{d\tan(e+fx)}}{\sqrt[3]{b\sin(e+fx)}}\,dx = \frac{\left(b\cos^{\frac{3}{2}}(e+fx)(d\tan(e+fx))^{3/2}\right)\int \frac{\sqrt[6]{b\sin(e+fx)}}{\sqrt{\cos(e+fx)}}\,dx}{d(b\sin(e+fx))^{3/2}}$$
$$= \frac{6\cos^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{7}{12},\frac{3}{4};\frac{19}{12};\sin^2(e+fx)\right)(d\tan(e+fx))^{3/2}}{7df\sqrt[3]{b\sin(e+fx)}}$$

Mathematica [A] time = 0.33, size = 64, normalized size = 1.00

$$\frac{6\cos^2(e+fx)^{3/4}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{7}{12},\frac{3}{4};\frac{19}{12};\sin^2(e+fx)\right)}{7df\sqrt[3]{b\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Tan[e + f*x]]/(b*Sin[e + f*x])^(1/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(3/4)*Hypergeometric2F1[7/12, 3/4, 19/12, Sin[e + f*x]^
2]*(d*Tan[e + f*x])^(3/2))/(7*d*f*(b*Sin[e + f*x])^(1/3))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sin\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}}{b\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*sin(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))/(b*sin(f*x + e)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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```

```
i,const vecteur & l) Error: Bad Argument ValueDiscontinuities at zeroes of
t_nostep^2-1 were not checkedEvaluation time: 1.35Done
```

maple [F] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/3),x)
[Out] int((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/3),x)
```

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

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))/(b*sin(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{d\tan\left(e+f\,x\right)}}{{\left(b\,\sin\left(e+f\,x\right)\right)}^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/(b*sin(e + f*x))^(1/3),x)
[Out] int((d*tan(e + f*x))^(1/2)/(b*sin(e + f*x))^(1/3), x)
```

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

$$\int \frac{\sqrt{d\tan\left(e+fx\right)}}{\sqrt[3]{b\sin\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(1/2)/(b*sin(f*x+e))**(1/3),x)
[Out] Integral(sqrt(d*tan(e + f*x))/(b*sin(e + f*x))**(1/3), x)
```

3.148 $\int \frac{\sqrt{d\tan(e+fx)}}{(b\sin(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=62

$$\frac{6\cos^2(e+fx)^{3/4}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{13}{12};\sin^2(e+fx)\right)}{df(b\sin(e+fx))^{4/3}}$$

```
[Out] 6*(cos(f*x+e)^2)^(3/4)*hypergeom([1/12, 3/4],[13/12],sin(f*x+e)^2)*(d*tan(f
*x+e))^(3/2)/d/f/(b*sin(f*x+e))^(4/3)
```

Rubi [A] time = 0.10, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{3/4}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{13}{12};\sin^2(e+fx)\right)}{df(b\sin(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Tan[e + f*x]]/(b*Sin[e + f*x])^(4/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(3/4)*Hypergeometric2F1[1/12, 3/4, 13/12, Sin[e + f*x]^
2]*(d*Tan[e + f*x])^(3/2))/(d*f*(b*Sin[e + f*x])^(4/3))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \frac{\sqrt{d\tan(e+fx)}}{(b\sin(e+fx))^{4/3}}\,dx = \frac{\left(b\cos^{\frac{3}{2}}(e+fx)(d\tan(e+fx))^{3/2}\right)\int \frac{1}{\sqrt{\cos(e+fx)}\,(b\sin(e+fx))^{5/6}}\,dx}{d(b\sin(e+fx))^{3/2}}$$
$$= \frac{6\cos^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{13}{12};\sin^2(e+fx)\right)(d\tan(e+fx))^{3/2}}{df(b\sin(e+fx))^{4/3}}$$

Mathematica [A] time = 0.32, size = 67, normalized size = 1.08

$$\frac{3\sin(2(e+fx))\sqrt{d\tan(e+fx)}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{13}{12};\sin^2(e+fx)\right)}{f\sqrt[4]{\cos^2(e+fx)}\,(b\sin(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Tan[e + f*x]]/(b*Sin[e + f*x])^(4/3),x]
```

```
[Out] (3*Hypergeometric2F1[1/12, 3/4, 13/12, Sin[e + f*x]^2]*Sin[2*(e + f*x)]*Sqr
t[d*Tan[e + f*x]])/(f*(Cos[e + f*x]^2)^(1/4)*(b*Sin[e + f*x])^(4/3))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b\sin\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}}{b^2\cos\left(fx+e\right)^2-b^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(-(b*sin(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))/(b^2*cos(f*x + e)^2 -
 b^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
```

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tep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to c
heck sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assume
s constant sign by intervals (correct if the argument is real):Check [abs(t
```

```
_nostep^2-1)]sym2poly/r2sym(const gen & e,const index_m & i,const vecteur &
 l) Error: Bad Argument ValueDiscontinuities at zeroes of t_nostep^2-1 were
 not checkedEvaluation time: 1.44Done
```

maple [F] time = 0.49, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d \tan \left(f x + e\right)}}{\left(b \sin \left(f x + e\right)\right)^{\frac{4}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(4/3),x)
[Out] int((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(4/3),x)
```

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

$$\int \frac{\sqrt{d \tan \left(f x + e\right)}}{\left(b \sin \left(f x + e\right)\right)^{\frac{4}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sin(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))/(b*sin(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{d \tan \left(e + f\, x\right)}}{{\left(b\, \sin \left(e + f\, x\right)\right)}^{4/3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/(b*sin(e + f*x))^(4/3),x)
[Out] int((d*tan(e + f*x))^(1/2)/(b*sin(e + f*x))^(4/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(1/2)/(b*sin(f*x+e))**(4/3),x)
[Out] Timed out
```

3.149 $\int (b\sin(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{5/4}(b\sin(e+fx))^{4/3}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{23}{12};\frac{35}{12};\sin^2(e+fx)\right)}{23df}$$

```
[Out] 6/23*(cos(f*x+e)^2)^(5/4)*hypergeom([5/4, 23/12],[35/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(4/3)*(d*tan(f*x+e))^(5/2)/d/f
```

Rubi [A] time = 0.10, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{5/4}(b\sin(e+fx))^{4/3}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{23}{12};\frac{35}{12};\sin^2(e+fx)\right)}{23df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(4/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(5/4)*Hypergeometric2F1[5/4, 23/12, 35/12, Sin[e + f*x]
^2]*(b*Sin[e + f*x])^(4/3)*(d*Tan[e + f*x])^(5/2))/(23*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int (b\sin(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,dx = \frac{\left(b\cos^{\frac{5}{2}}(e+fx)(d\tan(e+fx))^{5/2}\right)\int \frac{(b\sin(e+fx))^{17/6}}{\cos^{\frac{3}{2}}(e+fx)}\,dx}{d(b\sin(e+fx))^{5/2}}$$
$$= \frac{6\cos^2(e+fx)^{5/4}\,{}_2F_1\left(\frac{5}{4},\frac{23}{12};\frac{35}{12};\sin^2(e+fx)\right)(b\sin(e+fx))^{4/3}(d\tan(e$$

Mathematica [A] time = 0.54, size = 63, normalized size = 0.98

$$-\frac{2d(b\sin(e+fx))^{4/3}\sqrt{d\tan(e+fx)}\left(\sqrt[4]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{11}{12};\frac{23}{12};\sin^2(e+fx)\right)-1\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(4/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*d*(-1 + (Cos[e + f*x]^2)^(1/4)*Hypergeometric2F1[1/4, 11/12, 23/12, Sin
[e + f*x]^2])*(b*Sin[e + f*x])^(4/3)*Sqrt[d*Tan[e + f*x]])/f
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,bd\sin\left(fx+e\right)\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*sin(f*x + e))^(1/3)*sqrt(d*tan(f*x + e))*b*d*sin(f*x + e)*tan(f
*x + e), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \left(b\sin\left(fx+e\right)\right)^{\frac{4}{3}}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x)
```

```
[Out] int((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x)
```

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

$$\int \left(b \sin \left(fx+e\right)\right)^{\frac{4}{3}} \left(d \tan \left(fx+e\right)\right)^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*sin(f*x + e))^(4/3)*(d*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(b\ \sin\left(e+f\,x\right)\right)^{4/3}\,\left(d\tan\left(e+f\,x\right)\right)^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(4/3)*(d*tan(e + f*x))^(3/2),x)
```

```
[Out] int((b*sin(e + f*x))^(4/3)*(d*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(4/3)*(d*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.150 $\int \sqrt[3]{b\sin(e+fx)}\,(d\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{5/4}\sqrt[3]{b\sin(e+fx)}\,(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

```
[Out] 6/17*(cos(f*x+e)^2)^(5/4)*hypergeom([5/4, 17/12],[29/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(1/3)*(d*tan(f*x+e))^(5/2)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{5/4}\sqrt[3]{b\sin(e+fx)}\,(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(1/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(5/4)*Hypergeometric2F1[5/4, 17/12, 29/12, Sin[e + f*x]
^2]*(b*Sin[e + f*x])^(1/3)*(d*Tan[e + f*x])^(5/2))/(17*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \sqrt[3]{b\sin(e+fx)}\,(d\tan(e+fx))^{3/2}\,dx = \frac{\left(b\cos^{\frac{5}{2}}(e+fx)(d\tan(e+fx))^{5/2}\right)\int \frac{(b\sin(e+fx))^{11/6}}{\cos^{\frac{3}{2}}(e+fx)}\,dx}{d(b\sin(e+fx))^{5/2}}$$
$$= \frac{6\cos^2(e+fx)^{5/4}\,{}_2F_1\left(\frac{5}{4},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)\sqrt[3]{b\sin(e+fx)}\,(d\tan(e+}{17df}$$

Mathematica [A] time = 0.43, size = 63, normalized size = 0.98

$$-\frac{2d\sqrt[3]{b\sin(e+fx)}\sqrt{d\tan(e+fx)}\left(\sqrt[4]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{5}{12};\frac{17}{12};\sin^2(e+fx)\right)-1\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(1/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*d*(-1 + (Cos[e + f*x]^2)^(1/4)*Hypergeometric2F1[1/4, 5/12, 17/12, Sin[
e + f*x]^2])*(b*Sin[e + f*x])^(1/3)*Sqrt[d*Tan[e + f*x]])/f
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,d\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*sin(f*x + e))^(1/3)*sqrt(d*tan(f*x + e))*d*tan(f*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}} \left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x)
[Out] int((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x)
```

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

$$\int \left(b\sin\left(fx+e\right)\right)^{\frac{1}{3}} \left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((b*sin(f*x + e))^(1/3)*(d*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(b\,\sin\left(e+f\,x\right)\right)}^{1/3}\,{\left(d\,\tan\left(e+f\,x\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(1/3)*(d*tan(e + f*x))^(3/2),x)
[Out] int((b*sin(e + f*x))^(1/3)*(d*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(1/3)*(d*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.151 $\int \frac{(d\tan(e+fx))^{3/2}}{\sqrt[3]{b\sin(e+fx)}}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{5/4}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{13}{12},\frac{5}{4};\frac{25}{12};\sin^2(e+fx)\right)}{13df\sqrt[3]{b\sin(e+fx)}}$$

```
[Out] 6/13*(cos(f*x+e)^2)^(5/4)*hypergeom([13/12, 5/4],[25/12],sin(f*x+e)^2)*(d*t
an(f*x+e))^(5/2)/d/f/(b*sin(f*x+e))^(1/3)
```

Rubi [A] time = 0.10, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{5/4}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{13}{12},\frac{5}{4};\frac{25}{12};\sin^2(e+fx)\right)}{13df\sqrt[3]{b\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[e + f*x])^(3/2)/(b*Sin[e + f*x])^(1/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(5/4)*Hypergeometric2F1[13/12, 5/4, 25/12, Sin[e + f*x]
^2]*(d*Tan[e + f*x])^(5/2))/(13*d*f*(b*Sin[e + f*x])^(1/3))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{(d\tan(e+fx))^{3/2}}{\sqrt[3]{b\sin(e+fx)}}\,dx = \frac{\left(b\cos^{\frac{5}{2}}(e+fx)(d\tan(e+fx))^{5/2}\right)\int \frac{(b\sin(e+fx))^{7/6}}{\cos^{\frac{3}{2}}(e+fx)}\,dx}{d(b\sin(e+fx))^{5/2}}$$
$$= \frac{6\cos^2(e+fx)^{5/4}\,{}_2F_1\left(\frac{13}{12},\frac{5}{4};\frac{25}{12};\sin^2(e+fx)\right)(d\tan(e+fx))^{5/2}}{13df\sqrt[3]{b\sin(e+fx)}}$$

Mathematica [A] time = 0.46, size = 63, normalized size = 0.98

$$-\frac{2d\sqrt{d\tan(e+fx)}\left(\sqrt[4]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{12},\frac{1}{4};\frac{13}{12};\sin^2(e+fx)\right)-1\right)}{f\sqrt[3]{b\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[e + f*x])^(3/2)/(b*Sin[e + f*x])^(1/3),x]
```

```
[Out] (-2*d*(-1 + (Cos[e + f*x]^2)^(1/4)*Hypergeometric2F1[1/12, 1/4, 13/12, Sin[
e + f*x]^2])*Sqrt[d*Tan[e + f*x]])/(f*(b*Sin[e + f*x])^(1/3))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sin\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}\,d\tan\left(fx+e\right)}{b\sin\left(fx+e\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*sin(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))*d*tan(f*x + e)/(b*sin(
f*x + e)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
```

```
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2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs o
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r sign assumes constant sign by intervals (correct if the argument is real)
:Check [abs(t_nostep^2-1)]sym2poly/r2sym(const gen & e,const index_m & i,co
nst vecteur & l) Error: Bad Argument ValueDiscontinuities at zeroes of t_no
step^2-1 were not checkedEvaluation time: 1.31Done
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\left(d \tan \left(f x+e\right)\right)^{\frac{3}{2}}}{\left(b \sin \left(f x+e\right)\right)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(1/3),x)
[Out] int((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(1/3),x)
```

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

$$\int \frac{\left(d \tan \left(f x+e\right)\right)^{\frac{3}{2}}}{\left(b \sin \left(f x+e\right)\right)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate((d*tan(f*x + e))^(3/2)/(b*sin(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{{\left(d\,\mathrm{tan}\left(e+f\,x\right)\right)}^{3/2}}{{\left(b\,\sin\left(e+f\,x\right)\right)}^{1/3}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(3/2)/(b*sin(e + f*x))^(1/3),x)
[Out] int((d*tan(e + f*x))^(3/2)/(b*sin(e + f*x))^(1/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(3/2)/(b*sin(f*x+e))**(1/3),x)
[Out] Timed out
```

3.152 $\int \frac{(d\tan(e+fx))^{3/2}}{(b\sin(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{5/4}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{7}{12},\frac{5}{4};\frac{19}{12};\sin^2(e+fx)\right)}{7df(b\sin(e+fx))^{4/3}}$$

```
[Out] 6/7*(cos(f*x+e)^2)^(5/4)*hypergeom([7/12, 5/4],[19/12],sin(f*x+e)^2)*(d*tan
(f*x+e))^(5/2)/d/f/(b*sin(f*x+e))^(4/3)
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{5/4}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{7}{12},\frac{5}{4};\frac{19}{12};\sin^2(e+fx)\right)}{7df(b\sin(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[e + f*x])^(3/2)/(b*Sin[e + f*x])^(4/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(5/4)*Hypergeometric2F1[7/12, 5/4, 19/12, Sin[e + f*x]^
2]*(d*Tan[e + f*x])^(5/2))/(7*d*f*(b*Sin[e + f*x])^(4/3))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{(d\tan(e+fx))^{3/2}}{(b\sin(e+fx))^{4/3}}\,dx = \frac{\left(b\cos^{\frac{5}{2}}(e+fx)(d\tan(e+fx))^{5/2}\right)\int \frac{\sqrt[6]{b\sin(e+fx)}}{\cos^{\frac{3}{2}}(e+fx)}\,dx}{d(b\sin(e+fx))^{5/2}}$$
$$= \frac{6\cos^2(e+fx)^{5/4}\,{}_2F_1\left(\frac{7}{12},\frac{5}{4};\frac{19}{12};\sin^2(e+fx)\right)(d\tan(e+fx))^{5/2}}{7df(b\sin(e+fx))^{4/3}}$$

Mathematica [A] time = 0.49, size = 69, normalized size = 1.08

$$-\frac{2d(b\sin(e+fx))^{2/3}\sqrt{d\tan(e+fx)}\left(4\sqrt[4]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{7}{12};\frac{19}{12};\sin^2(e+fx)\right)-7\right)}{7b^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[e + f*x])^(3/2)/(b*Sin[e + f*x])^(4/3),x]
```

```
[Out] (-2*d*(-7 + 4*(Cos[e + f*x]^2)^(1/4)*Hypergeometric2F1[1/4, 7/12, 19/12, Si
n[e + f*x]^2])*(b*Sin[e + f*x])^(2/3)*Sqrt[d*Tan[e + f*x]])/(7*b^2*f)
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b\sin\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}\,d\tan\left(fx+e\right)}{b^2\cos\left(fx+e\right)^2-b^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(-(b*sin(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))*d*tan(f*x + e)/(b^2*c
os(f*x + e)^2 - b^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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y intervals (correct if the argument is real):Check [abs(t_nostep^2-1)]sym2
poly/r2sym(const gen & e,const index_m & i,const vecteur & l) Error: Bad Ar
gument ValueDiscontinuities at zeroes of t_nostep^2-1 were not checkedEvalu
ation time: 1.46Done
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\sin\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(4/3),x)
```

```
[Out] int((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(4/3),x)
```

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

$$\int \frac{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\sin\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sin(f*x+e))^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(f*x + e))^(3/2)/(b*sin(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{{\left(d\,\tan\left(e+f\,x\right)\right)}^{3/2}}{{\left(b\,\sin\left(e+f\,x\right)\right)}^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(3/2)/(b*sin(e + f*x))^(4/3),x)
```

```
[Out] int((d*tan(e + f*x))^(3/2)/(b*sin(e + f*x))^(4/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(3/2)/(b*sin(f*x+e))**(4/3),x)
```

```
[Out] Timed out
```

3.153 $\int \sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{4/3}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{7/6}\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

```
[Out] 6/17*(cos(f*x+e)^2)^(7/6)*hypergeom([7/6, 17/12],[29/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(1/2)*(d*tan(f*x+e))^(7/3)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{7/6}\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(7/6)*Hypergeometric2F1[7/6, 17/12, 29/12, Sin[e + f*x]
^2]*Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(7/3))/(17*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{4/3}\,dx = \frac{\left(b\cos^{\frac{7}{3}}(e+fx)(d\tan(e+fx))^{7/3}\right)\int \frac{(b\sin(e+fx))^{11/6}}{\cos^{\frac{4}{3}}(e+fx)}\,dx}{d(b\sin(e+fx))^{7/3}}$$

$$= \frac{6\cos^2(e+fx)^{7/6}\,{}_2F_1\left(\frac{7}{6},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)\sqrt{b\sin(e+fx)}\,(d\tan(e+}{17df}$$

Mathematica [A] time = 0.43, size = 65, normalized size = 1.02

$$-\frac{3d\sqrt{b\sin(e+fx)}\,\sqrt[3]{d\tan(e+fx)}\left(\sqrt[4]{\sec^2(e+fx)}\,{}_2F_1\left(\frac{5}{12},\frac{5}{4};\frac{17}{12};-\tan^2(e+fx)\right)-1\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (-3*d*(-1 + Hypergeometric2F1[5/12, 5/4, 17/12, -Tan[e + f*x]^2]*(Sec[e + f
*x]^2)^(1/4))*Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(1/3))/f
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\sin\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}d\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(1/3)*d*tan(f*x + e), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \sqrt{b\sin\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x)
[Out] int((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x)
```

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

$$\int \sqrt{b \sin\left(fx+e\right)} \left(d \tan\left(fx+e\right)\right)^{\frac{4}{3}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{b\,\sin\left(e+f\,x\right)}\,{\left(d\,\tan\left(e+f\,x\right)\right)}^{4/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(1/2)*(d*tan(e + f*x))^(4/3),x)
[Out] int((b*sin(e + f*x))^(1/2)*(d*tan(e + f*x))^(4/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(1/2)*(d*tan(f*x+e))**(4/3),x)
[Out] Timed out
```

3.154 $\int \sqrt{b\sin(e+fx)}\sqrt[3]{d\tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{2/3}\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{11}{12};\frac{23}{12};\sin^2(e+fx)\right)}{11df}$$

```
[Out] 6/11*(cos(f*x+e)^2)^(2/3)*hypergeom([2/3, 11/12],[23/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{2/3}\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{11}{12};\frac{23}{12};\sin^2(e+fx)\right)}{11df}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(2/3)*Hypergeometric2F1[2/3, 11/12, 23/12, Sin[e + f*x]
^2]*Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(4/3))/(11*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \sqrt{b \sin(e+fx)} \sqrt[3]{d \tan(e+fx)}\, dx = \frac{\left(b \cos^{\frac{4}{3}}(e+fx)(d \tan(e+fx))^{4/3}\right) \int \frac{(b \sin(e+fx))^{5/6}}{\sqrt[3]{\cos(e+fx)}}\, dx}{d(b \sin(e+fx))^{4/3}}$$
$$= \frac{6 \cos^2(e+fx)^{2/3}\, {}_2F_1\left(\frac{2}{3}, \frac{11}{12}; \frac{23}{12}; \sin^2(e+fx)\right) \sqrt{b \sin(e+fx)}\, (d \tan(e+$$
$$11df$$

Mathematica [A] time = 0.35, size = 66, normalized size = 1.03

$$\frac{6 \sqrt[4]{\sec^2(e+fx)} \sqrt{b \sin(e+fx)}\, (d \tan(e+fx))^{4/3}\, {}_2F_1\left(\frac{11}{12}, \frac{5}{4}; \frac{23}{12}; -\tan^2(e+fx)\right)}{11df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (6*Hypergeometric2F1[11/12, 5/4, 23/12, -Tan[e + f*x]^2]*(Sec[e + f*x]^2)^(
1/4)*Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(4/3))/(11*d*f)
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b \sin\left(fx+e\right)}\, \left(d \tan\left(fx+e\right)\right)^{\frac{1}{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(1/3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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```

maple [F] time = 0.56, size = 0, normalized size = 0.00

$$\int \sqrt{b \sin\left(fx+e\right)}\, \left(d \tan\left(fx+e\right)\right)^{\frac{1}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x)
```

```
[Out] int((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x)
```

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

$$\int \sqrt{b \sin\left(fx+e\right)}\, \left(d \tan\left(fx+e\right)\right)^{\frac{1}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{b\,\sin\left(e+f\,x\right)}\,\left(d\tan\left(e+f\,x\right)\right)^{1/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(1/2)*(d*tan(e + f*x))^(1/3),x)
[Out] int((b*sin(e + f*x))^(1/2)*(d*tan(e + f*x))^(1/3), x)
```

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

$$\int \sqrt{b\sin\left(e+fx\right)}\,\sqrt[3]{d\tan\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(1/2)*(d*tan(f*x+e))**(1/3),x)
[Out] Integral(sqrt(b*sin(e + f*x))*(d*tan(e + f*x))**(1/3), x)
```

3.155 $\int \frac{\sqrt{b \sin(e+fx)}}{\sqrt[3]{d \tan(e+fx)}} \, dx$

Optimal. Leaf size=64

$$\frac{6\sqrt[3]{\cos^2(e+fx)}\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{7}{12};\frac{19}{12};\sin^2(e+fx)\right)}{7df}$$

```
[Out] 6/7*(cos(f*x+e)^2)^(1/3)*hypergeom([1/3, 7/12],[19/12],sin(f*x+e)^2)*(b*sin
(f*x+e))^(1/2)*(d*tan(f*x+e))^(2/3)/d/f
```

Rubi [A] time = 0.08, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\sqrt[3]{\cos^2(e+fx)}\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{7}{12};\frac{19}{12};\sin^2(e+fx)\right)}{7df}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sin[e + f*x]]/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(1/3)*Hypergeometric2F1[1/3, 7/12, 19/12, Sin[e + f*x]^
2]*Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(2/3))/(7*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{\sqrt{b\sin(e+fx)}}{\sqrt[3]{d\tan(e+fx)}}\,dx = \frac{\left(b\cos^{\frac{2}{3}}(e+fx)(d\tan(e+fx))^{2/3}\right)\int \sqrt[3]{\cos(e+fx)}\,\sqrt[6]{b\sin(e+fx)}\,dx}{d(b\sin(e+fx))^{2/3}}$$
$$= \frac{6\sqrt[3]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{3},\frac{7}{12};\frac{19}{12};\sin^2(e+fx)\right)\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{2/3}}{7df}$$

Mathematica [A] time = 0.34, size = 66, normalized size = 1.03

$$\frac{6\sqrt[4]{\sec^2(e+fx)}\,\sqrt{b\sin(e+fx)}\,(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{7}{12},\frac{5}{4};\frac{19}{12};-\tan^2(e+fx)\right)}{7df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sin[e + f*x]]/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (6*Hypergeometric2F1[7/12, 5/4, 19/12, -Tan[e + f*x]^2]*(Sec[e + f*x]^2)^(1
/4)*Sqrt[b*Sin[e + f*x]]*(d*Tan[e + f*x])^(2/3))/(7*d*f)
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sin\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}}{d\tan\left(fx+e\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(2/3)/(d*tan(f*x + e)), x)
```

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

$$\int \frac{\sqrt{b\sin\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*sin(f*x + e))/(d*tan(f*x + e))^(1/3), x)
```

maple [F] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sin\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x)
```

```
[Out] int((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x)
```

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

$$\int \frac{\sqrt{b\sin\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*sin(f*x + e))/(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{b\,\sin\left(e+f\,x\right)}}{\left(d\tan\left(e+f\,x\right)\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(1/2)/(d*tan(e + f*x))^(1/3),x)
```

```
[Out] int((b*sin(e + f*x))^(1/2)/(d*tan(e + f*x))^(1/3), x)
```

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

$$\int \frac{\sqrt{b\sin\left(e+fx\right)}}{\sqrt[3]{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(1/2)/(d*tan(f*x+e))**(1/3),x)
```

```
[Out] Integral(sqrt(b*sin(e + f*x))/(d*tan(e + f*x))**(1/3), x)
```

3.156 $\int \frac{\sqrt{b \sin(e+fx)}}{(d \tan(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=62

$$\frac{6\sqrt{b\sin(e+fx)}\ {}_2F_1\left(-\frac{1}{6},\frac{1}{12};\frac{13}{12};\sin^2(e+fx)\right)}{df\sqrt[6]{\cos^2(e+fx)}\ \sqrt[3]{d\tan(e+fx)}}$$

```
[Out] 6*hypergeom([-1/6, 1/12],[13/12],sin(f*x+e)^2)*(b*sin(f*x+e))^(1/2)/d/f/(co
s(f*x+e)^2)^(1/6)/(d*tan(f*x+e))^(1/3)
```

Rubi [A] time = 0.10, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\sqrt{b\sin(e+fx)}\ {}_2F_1\left(-\frac{1}{6},\frac{1}{12};\frac{13}{12};\sin^2(e+fx)\right)}{df\sqrt[6]{\cos^2(e+fx)}\ \sqrt[3]{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sin[e + f*x]]/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (6*Hypergeometric2F1[-1/6, 1/12, 13/12, Sin[e + f*x]^2]*Sqrt[b*Sin[e + f*x]
])/(d*f*(Cos[e + f*x]^2)^(1/6)*(d*Tan[e + f*x])^(1/3))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{\sqrt{b\sin(e+fx)}}{(d\tan(e+fx))^{4/3}}\,dx = \frac{\left(b\sqrt[3]{b\sin(e+fx)}\right)\int \frac{\cos^{\frac{4}{3}}(e+fx)}{(b\sin(e+fx))^{5/6}}\,dx}{d\sqrt[3]{\cos(e+fx)}\,\sqrt[3]{d\tan(e+fx)}}$$
$$= \frac{6\,{}_2F_1\left(-\frac{1}{6},\frac{1}{12};\frac{13}{12};\sin^2(e+fx)\right)\sqrt{b\sin(e+fx)}}{df\sqrt[6]{\cos^2(e+fx)}\,\sqrt[3]{d\tan(e+fx)}}$$

Mathematica [A] time = 0.41, size = 64, normalized size = 1.03

$$\frac{6\sqrt[4]{\sec^2(e+fx)}\sqrt{b\sin(e+fx)}\,{}_2F_1\left(\frac{1}{12},\frac{5}{4};\frac{13}{12};-\tan^2(e+fx)\right)}{df\sqrt[3]{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sin[e + f*x]]/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (6*Hypergeometric2F1[1/12, 5/4, 13/12, -Tan[e + f*x]^2]*(Sec[e + f*x]^2)^(1
/4)*Sqrt[b*Sin[e + f*x]])/(d*f*(d*Tan[e + f*x])^(1/3))
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sin\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}}{d^2\tan\left(fx+e\right)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(2/3)/(d^2*tan(f*x + e)^2),
x)
```

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

$$\int \frac{\sqrt{b\sin\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x, algorithm="giac")
[Out] integrate(sqrt(b*sin(f*x + e))/(d*tan(f*x + e))^(4/3), x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sin\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x)
[Out] int((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x)
```

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

$$\int \frac{\sqrt{b\sin\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate(sqrt(b*sin(f*x + e))/(d*tan(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{b\,\sin\left(e+f\,x\right)}}{{\left(d\,\tan\left(e+f\,x\right)\right)}^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(1/2)/(d*tan(e + f*x))^(4/3),x)
[Out] int((b*sin(e + f*x))^(1/2)/(d*tan(e + f*x))^(4/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(1/2)/(d*tan(f*x+e))**(4/3),x)
[Out] Timed out
```

3.157 $\int (b\sin(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{7/6}(b\sin(e+fx))^{3/2}(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{23}{12};\frac{35}{12};\sin^2(e+fx)\right)}{23df}$$

```
[Out] 6/23*(cos(f*x+e)^2)^(7/6)*hypergeom([7/6, 23/12],[35/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(3/2)*(d*tan(f*x+e))^(7/3)/d/f
```

Rubi [A] time = 0.10, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{7/6}(b\sin(e+fx))^{3/2}(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{23}{12};\frac{35}{12};\sin^2(e+fx)\right)}{23df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(7/6)*Hypergeometric2F1[7/6, 23/12, 35/12, Sin[e + f*x]
^2]*(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(7/3))/(23*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int (b\sin(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,dx = \frac{\left(b\cos^{\frac{7}{3}}(e+fx)(d\tan(e+fx))^{7/3}\right)\int \frac{(b\sin(e+fx))^{17/6}}{\cos^{\frac{4}{3}}(e+fx)}\,dx}{d(b\sin(e+fx))^{7/3}}$$

$$= \frac{6\cos^2(e+fx)^{7/6}\,{}_2F_1\left(\frac{7}{6},\frac{23}{12};\frac{35}{12};\sin^2(e+fx)\right)(b\sin(e+fx))^{3/2}(d\tan(e}{23df}$$

Mathematica [A] time = 0.62, size = 85, normalized size = 1.33

$$\frac{3d(b\sin(e+fx))^{3/2}\sqrt[3]{d\tan(e+fx)}\left(\sqrt[4]{\sec^2(e+fx)}-\sec^2(e+fx)\,{}_2F_1\left(\frac{11}{12},\frac{7}{4};\frac{23}{12};-\tan^2(e+fx)\right)\right)}{f\sqrt[4]{\sec^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (3*d*(-(Hypergeometric2F1[11/12, 7/4, 23/12, -Tan[e + f*x]^2]*Sec[e + f*x]^
2) + (Sec[e + f*x]^2)^(1/4))*(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(1/3))
/(f*(Sec[e + f*x]^2)^(1/4))
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\sin\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}bd\sin\left(fx+e\right)\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(1/3)*b*d*sin(f*x + e)*tan(f
*x + e), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \left(b \sin \left(f x + e\right)\right)^{\frac{3}{2}} \left(d \tan \left(f x + e\right)\right)^{\frac{4}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x)
[Out] int((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x)
```

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

$$\int \left(b \sin \left(f x + e\right)\right)^{\frac{3}{2}} \left(d \tan \left(f x + e\right)\right)^{\frac{4}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate((b*sin(f*x + e))^(3/2)*(d*tan(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(b\,\sin\left(e+f\,x\right)\right)}^{3/2}\,{\left(d\,\tan\left(e+f\,x\right)\right)}^{4/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(3/2)*(d*tan(e + f*x))^(4/3),x)
[Out] int((b*sin(e + f*x))^(3/2)*(d*tan(e + f*x))^(4/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(3/2)*(d*tan(f*x+e))**(4/3),x)
[Out] Timed out
```

3.158 $\int (b\sin(e+fx))^{3/2}\sqrt[3]{d\tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{6\cos^2(e+fx)^{2/3}(b\sin(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

```
[Out] 6/17*(cos(f*x+e)^2)^(2/3)*hypergeom([2/3, 17/12],[29/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\cos^2(e+fx)^{2/3}(b\sin(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)}{17df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(2/3)*Hypergeometric2F1[2/3, 17/12, 29/12, Sin[e + f*x]
^2]*(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(4/3))/(17*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int (b\sin(e+fx))^{3/2}\sqrt[3]{d\tan(e+fx)}\,dx = \frac{\left(b\cos^{\frac{4}{3}}(e+fx)(d\tan(e+fx))^{4/3}\right)\int \frac{(b\sin(e+fx))^{11/6}}{\sqrt[3]{\cos(e+fx)}}\,dx}{d(b\sin(e+fx))^{4/3}}$$
$$= \frac{6\cos^2(e+fx)^{2/3}\,{}_2F_1\left(\frac{2}{3},\frac{17}{12};\frac{29}{12};\sin^2(e+fx)\right)(b\sin(e+fx))^{3/2}(d\tan(e}{17df}$$

Mathematica [A] time = 0.50, size = 72, normalized size = 1.12

$$\frac{6\cos(e+fx)\sec^2(e+fx)^{7/4}(b\sin(e+fx))^{5/2}\sqrt[3]{d\tan(e+fx)}\,{}_2F_1\left(\frac{17}{12},\frac{7}{4};\frac{29}{12};-\tan^2(e+fx)\right)}{17bf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (6*Cos[e + f*x]*Hypergeometric2F1[17/12, 7/4, 29/12, -Tan[e + f*x]^2]*(Sec[
e + f*x]^2)^(7/4)*(b*Sin[e + f*x])^(5/2)*(d*Tan[e + f*x])^(1/3))/(17*b*f)
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\sin\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}b\sin\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(1/3)*b*sin(f*x + e), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \left(b\sin\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x)
[Out] int((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x)
```

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

$$\int \left(b\sin\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate((b*sin(f*x + e))^(3/2)*(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(b\,\sin\left(e+f\,x\right)\right)}^{3/2}\,{\left(d\,\tan\left(e+f\,x\right)\right)}^{1/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(3/2)*(d*tan(e + f*x))^(1/3),x)
[Out] int((b*sin(e + f*x))^(3/2)*(d*tan(e + f*x))^(1/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(3/2)*(d*tan(f*x+e))**(1/3),x)
[Out] Timed out
```

3.159 $\int \frac{(b\sin(e+fx))^{3/2}}{\sqrt[3]{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=64

$$\frac{6\sqrt[3]{\cos^2(e+fx)}\,(b\sin(e+fx))^{3/2}(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{13}{12};\frac{25}{12};\sin^2(e+fx)\right)}{13df}$$

```
[Out] 6/13*(cos(f*x+e)^2)^(1/3)*hypergeom([1/3, 13/12],[25/12],sin(f*x+e)^2)*(b*s
in(f*x+e))^(3/2)*(d*tan(f*x+e))^(2/3)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6\sqrt[3]{\cos^2(e+fx)}\,(b\sin(e+fx))^{3/2}(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{13}{12};\frac{25}{12};\sin^2(e+fx)\right)}{13df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(3/2)/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (6*(Cos[e + f*x]^2)^(1/3)*Hypergeometric2F1[1/3, 13/12, 25/12, Sin[e + f*x]
^2]*(b*Sin[e + f*x])^(3/2)*(d*Tan[e + f*x])^(2/3))/(13*d*f)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \frac{(b\sin(e+fx))^{3/2}}{\sqrt[3]{d\tan(e+fx)}}\,dx = \frac{\left(b\cos^{\frac{2}{3}}(e+fx)(d\tan(e+fx))^{2/3}\right)\int \sqrt[3]{\cos(e+fx)}\,(b\sin(e+fx))^{7/6}\,dx}{d(b\sin(e+fx))^{2/3}}$$
$$= \frac{6\sqrt[3]{\cos^2(e+fx)}\ {}_2F_1\left(\frac{1}{3},\frac{13}{12};\frac{25}{12};\sin^2(e+fx)\right)(b\sin(e+fx))^{3/2}(d\tan(e+fx))^{2/3}}{13df}$$

Mathematica [A] time = 0.75, size = 67, normalized size = 1.05

$$\frac{2d(b\sin(e+fx))^{3/2}\left(\sec^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{13}{12};-\tan^2(e+fx)\right)-1\right)}{3f(d\tan(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(3/2)/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (2*d*(-1 + Hypergeometric2F1[1/12, 3/4, 13/12, -Tan[e + f*x]^2]*(Sec[e + f*
x]^2)^(3/4))*(b*Sin[e + f*x])^(3/2))/(3*f*(d*Tan[e + f*x])^(4/3))
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sin\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}\,b\sin\left(fx+e\right)}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(2/3)*b*sin(f*x + e)/(d*tan(
f*x + e)), x)
```

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

$$\int \frac{\left(b\sin\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*sin(f*x + e))^(3/2)/(d*tan(f*x + e))^(1/3), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(b \sin \left(f x+e\right)\right)^{\frac{3}{2}}}{\left(d \tan \left(f x+e\right)\right)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x)
[Out] int((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x)
```

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

$$\int \frac{\left(b \sin \left(f x+e\right)\right)^{\frac{3}{2}}}{\left(d \tan \left(f x+e\right)\right)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate((b*sin(f*x + e))^(3/2)/(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{{\left(b\,\sin\left(e+f\,x\right)\right)}^{3/2}}{{\left(d\,\mathrm{tan}\left(e+f\,x\right)\right)}^{1/3}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^(3/2)/(d*tan(e + f*x))^(1/3),x)
[Out] int((b*sin(e + f*x))^(3/2)/(d*tan(e + f*x))^(1/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))**(3/2)/(d*tan(f*x+e))**(1/3),x)
[Out] Timed out
```

3.160 $\int \frac{(b\sin(e+fx))^{3/2}}{(d\tan(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=64

$$\frac{6(b\sin(e+fx))^{3/2}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{12};\frac{19}{12};\sin^2(e+fx)\right)}{7df\sqrt[6]{\cos^2(e+fx)}\,\sqrt[3]{d\tan(e+fx)}}$$

```
[Out] 6/7*hypergeom([-1/6, 7/12],[19/12],sin(f*x+e)^2)*(b*sin(f*x+e))^(3/2)/d/f/(
cos(f*x+e)^2)^(1/6)/(d*tan(f*x+e))^(1/3)
```

Rubi [A] time = 0.09, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2602, 2577}

$$\frac{6(b\sin(e+fx))^{3/2}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{12};\frac{19}{12};\sin^2(e+fx)\right)}{7df\sqrt[6]{\cos^2(e+fx)}\,\sqrt[3]{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sin[e + f*x])^(3/2)/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (6*Hypergeometric2F1[-1/6, 7/12, 19/12, Sin[e + f*x]^2]*(b*Sin[e + f*x])^(3
/2))/(7*d*f*(Cos[e + f*x]^2)^(1/6)*(d*Tan[e + f*x])^(1/3))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{(b\sin(e+fx))^{3/2}}{(d\tan(e+fx))^{4/3}}\,dx = \frac{\left(b\sqrt[3]{b\sin(e+fx)}\right)\int \cos^{\frac{4}{3}}(e+fx)\sqrt[6]{b\sin(e+fx)}\,dx}{d\sqrt[3]{\cos(e+fx)}\,\sqrt[3]{d\tan(e+fx)}}$$
$$= \frac{6\,{}_2F_1\left(-\frac{1}{6},\frac{7}{12};\frac{19}{12};\sin^2(e+fx)\right)(b\sin(e+fx))^{3/2}}{7df\sqrt[6]{\cos^2(e+fx)}\,\sqrt[3]{d\tan(e+fx)}}$$

Mathematica [A] time = 0.39, size = 70, normalized size = 1.09

$$\frac{2(b\sin(e+fx))^{3/2}\left(2\sec^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{7}{12},\frac{3}{4};\frac{19}{12};-\tan^2(e+fx)\right)+7\right)}{21df\sqrt[3]{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sin[e + f*x])^(3/2)/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (2*(7 + 2*Hypergeometric2F1[7/12, 3/4, 19/12, -Tan[e + f*x]^2]*(Sec[e + f*x
]^2)^(3/4))*(b*Sin[e + f*x])^(3/2))/(21*d*f*(d*Tan[e + f*x])^(1/3))
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sin\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}b\sin\left(fx+e\right)}{d^2\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sin(f*x + e))*(d*tan(f*x + e))^(2/3)*b*sin(f*x + e)/(d^2*ta
n(f*x + e)^2), x)
```

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

$$\int \frac{\left(b\sin\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x, algorithm="giac")
```

[Out] integrate((b*sin(f*x + e))^(3/2)/(d*tan(f*x + e))^(4/3), x)

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{\left(b \sin \left(f x + e\right)\right)^{\frac{3}{2}}}{\left(d \tan \left(f x + e\right)\right)^{\frac{4}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x)

[Out] int((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x)

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

$$\int \frac{\left(b \sin \left(f x + e\right)\right)^{\frac{3}{2}}}{\left(d \tan \left(f x + e\right)\right)^{\frac{4}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*sin(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x, algorithm="maxima")

[Out] integrate((b*sin(f*x + e))^(3/2)/(d*tan(f*x + e))^(4/3), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(b\,\sin\left(e+f\,x\right)\right)^{3/2}}{\left(d\,\tan\left(e+f\,x\right)\right)^{4/3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*sin(e + f*x))^(3/2)/(d*tan(e + f*x))^(4/3),x)

[Out] int((b*sin(e + f*x))^(3/2)/(d*tan(e + f*x))^(4/3), x)

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*sin(f*x+e))**(3/2)/(d*tan(f*x+e))**(4/3),x)

[Out] Timed out

3.161 $\int (a\sin(e+fx))^m \tan^3(e+fx)\,dx$

Optimal. Leaf size=48

$$\frac{(a\sin(e+fx))^{m+4}\,{}_2F_1\left(2,\frac{m+4}{2};\frac{m+6}{2};\sin^2(e+fx)\right)}{a^4f(m+4)}$$

```
[Out] hypergeom([2, 2+1/2*m],[3+1/2*m],sin(f*x+e)^2)*(a*sin(f*x+e))^(4+m)/a^4/f/(
4+m)
```

Rubi [A] time = 0.05, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2592, 364}

$$\frac{(a\sin(e+fx))^{m+4}\,{}_2F_1\left(2,\frac{m+4}{2};\frac{m+6}{2};\sin^2(e+fx)\right)}{a^4f(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m*Tan[e + f*x]^3,x]
```

```
[Out] (Hypergeometric2F1[2, (4 + m)/2, (6 + m)/2, Sin[e + f*x]^2]*(a*Sin[e + f*x]
)^(4 + m))/(a^4*f*(4 + m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2592

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> With[{ff = FreeFactors[Sin[e + f*x], x]}, Dist[ff/f, Subst[Int[(
ff*x)^(m + n)/(a^2 - ff^2*x^2)^((n + 1)/2), x], x, (a*Sin[e + f*x])/ff], x]
] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)/2]
```

Rubi steps

$$\int (a\sin(e+fx))^m \tan^3(e+fx)\,dx = \frac{\text{Subst}\left(\int \frac{x^{3+m}}{(a^2-x^2)^2}\,dx, x, a\sin(e+fx)\right)}{f}$$
$$= \frac{{}_2F_1\left(2, \frac{4+m}{2}; \frac{6+m}{2}; \sin^2(e+fx)\right)(a\sin(e+fx))^{4+m}}{a^4 f(4+m)}$$

Mathematica [A] time = 0.06, size = 53, normalized size = 1.10

$$\frac{\sin^4(e+fx)(a\sin(e+fx))^m\,{}_2F_1\left(2, \frac{m+4}{2}; \frac{m+4}{2}+1; \sin^2(e+fx)\right)}{f(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m*Tan[e + f*x]^3,x]
[Out] (Hypergeometric2F1[2, (4 + m)/2, 1 + (4 + m)/2, Sin[e + f*x]^2]*Sin[e + f*x
]^4*(a*Sin[e + f*x])^m)/(f*(4 + m))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sin\left(fx+e\right)\right)^m \tan\left(fx+e\right)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^3,x, algorithm="fricas")
[Out] integral((a*sin(f*x + e))^m*tan(f*x + e)^3, x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^m \tan\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^3,x, algorithm="giac")
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e)^3, x)
```

maple [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \left(a\sin\left(fx+e\right)\right)^m \left(\tan^3\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m*tan(f*x+e)^3,x)
```

```
[Out] int((a*sin(f*x+e))^m*tan(f*x+e)^3,x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^3,x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^{3}\,\left(a\,\sin\left(e+f\,x\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^3*(a*sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)^3*(a*sin(e + f*x))^m, x)
```

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

$$\int \left(a\sin\left(e+fx\right)\right)^{m}\tan^{3}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m*tan(f*x+e)**3,x)
```

```
[Out] Integral((a*sin(e + f*x))**m*tan(e + f*x)**3, x)
```

3.162 $\int (a\sin(e+fx))^m \tan(e+fx)\,dx$

Optimal. Leaf size=48

$$\frac{(a\sin(e+fx))^{m+2}\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+4}{2};\sin^2(e+fx)\right)}{a^2f(m+2)}$$

```
[Out] hypergeom([1, 1+1/2*m],[2+1/2*m],sin(f*x+e)^2)*(a*sin(f*x+e))^(2+m)/a^2/f/(
2+m)
```

Rubi [A] time = 0.03, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {2592, 364}

$$\frac{(a\sin(e+fx))^{m+2}\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+4}{2};\sin^2(e+fx)\right)}{a^2f(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m*Tan[e + f*x],x]
```

```
[Out] (Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, Sin[e + f*x]^2]*(a*Sin[e + f*x]
)^(2 + m))/(a^2*f*(2 + m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2592

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> With[{ff = FreeFactors[Sin[e + f*x], x]}, Dist[ff/f, Subst[Int[(
ff*x)^(m + n)/(a^2 - ff^2*x^2)^((n + 1)/2), x], x, (a*Sin[e + f*x])/ff], x]
] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)/2]
```

Rubi steps

$$\int (a\sin(e+fx))^m \tan(e+fx)\,dx = \frac{\text{Subst}\left(\int \frac{x^{1+m}}{a^2-x^2}\,dx, x, a\sin(e+fx)\right)}{f}$$
$$= \frac{{}_2F_1\left(1, \frac{2+m}{2}; \frac{4+m}{2}; \sin^2(e+fx)\right)(a\sin(e+fx))^{2+m}}{a^2 f(2+m)}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 1.10

$$\frac{\sin^2(e+fx)(a\sin(e+fx))^m\,{}_2F_1\left(1, \frac{m+2}{2}; \frac{m+2}{2}+1; \sin^2(e+fx)\right)}{f(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m*Tan[e + f*x],x]
```

```
[Out] (Hypergeometric2F1[1, (2 + m)/2, 1 + (2 + m)/2, Sin[e + f*x]^2]*Sin[e + f*x
]^2*(a*Sin[e + f*x])^m)/(f*(2 + m))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sin\left(fx+e\right)\right)^m \tan\left(fx+e\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e),x, algorithm="fricas")
```

```
[Out] integral((a*sin(f*x + e))^m*tan(f*x + e), x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^m \tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e), x)
```

maple [F] time = 1.00, size = 0, normalized size = 0.00

$$\int \left(a\sin\left(fx+e\right)\right)^m \tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m*tan(f*x+e),x)
```

```
[Out] int((a*sin(f*x+e))^m*tan(f*x+e),x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e),x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)\,\left(a\,\sin\left(e+f\,x\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)*(a*sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)*(a*sin(e + f*x))^m, x)
```

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

$$\int \left(a\sin\left(e+fx\right)\right)^{m}\tan\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m*tan(f*x+e),x)
```

```
[Out] Integral((a*sin(e + f*x))**m*tan(e + f*x), x)
```

3.163 $\int \cot(e+fx)(a\sin(e+fx))^m\,dx$

Optimal. Leaf size=17

$$\frac{(a\sin(e+fx))^m}{fm}$$

[Out] (a*sin(f*x+e))^m/f/m

Rubi [A] time = 0.03, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {2592, 30}

$$\frac{(a\sin(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

[In] Int[Cot[e + f*x]*(a*Sin[e + f*x])^m,x]

[Out] (a*Sin[e + f*x])^m/(f*m)

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2592

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> With[{ff = FreeFactors[Sin[e + f*x], x]}, Dist[ff/f, Subst[Int[(
ff*x)^(m + n)/(a^2 - ff^2*x^2)^((n + 1)/2), x], x, (a*Sin[e + f*x])/ff], x]
] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)/2]
```

Rubi steps

$$\begin{aligned}\int \cot(e+fx)(a\sin(e+fx))^m\,dx &= \frac{\text{Subst}\left(\int x^{-1+m}\,dx, x, a\sin(e+fx)\right)}{f}\\ &= \frac{(a\sin(e+fx))^m}{fm}\end{aligned}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 1.00

$$\frac{(a\sin(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]*(a*Sin[e + f*x])^m,x]
```

```
[Out] (a*Sin[e + f*x])^m/(f*m)
```

fricas [A] time = 0.70, size = 17, normalized size = 1.00

$$\frac{\left(a \sin\left(fx+e\right)\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(a*sin(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] (a*sin(f*x + e))^m/(f*m)
```

giac [A] time = 0.32, size = 18, normalized size = 1.06

$$\frac{\left(a \sin\left(fx+e\right)\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(a*sin(f*x+e))^m,x, algorithm="giac")
```

```
[Out] (a*sin(f*x + e))^m/(f*m)
```

maple [A] time = 0.06, size = 18, normalized size = 1.06

$$\frac{\left(a \sin\left(fx+e\right)\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)*(a*sin(f*x+e))^m,x)
```

```
[Out] (a*sin(f*x+e))^m/f/m
```

maxima [A] time = 0.51, size = 18, normalized size = 1.06

$$\frac{a^{m} \sin\left(fx+e\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(a*sin(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] a^m*sin(f*x + e)^m/(f*m)
```

mupad [B] time = 2.45, size = 17, normalized size = 1.00

$$\frac{\left(a\,\sin\left(e+f\,x\right)\right)^m}{f\,m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)*(a*sin(e + f*x))^m,x)
[Out] (a*sin(e + f*x))^m/(f*m)
```

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

$$\int \left(a\sin\left(e+fx\right)\right)^m\cot\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(a*sin(f*x+e))**m,x)
[Out] Integral((a*sin(e + f*x))**m*cot(e + f*x), x)
```

3.164 $\int \cot^3(e+fx)(a\sin(e+fx))^m\,dx$

Optimal. Leaf size=46

$$-\frac{a^2(a\sin(e+fx))^{m-2}}{f(2-m)}-\frac{(a\sin(e+fx))^m}{fm}$$

```
[Out] -a^2*(a*sin(f*x+e))^(-2+m)/f/(2-m)-(a*sin(f*x+e))^m/f/m
```

Rubi [A] time = 0.05, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2592, 14}

$$-\frac{a^2(a\sin(e+fx))^{m-2}}{f(2-m)}-\frac{(a\sin(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^3*(a*Sin[e + f*x])^m,x]
```

```
[Out] -((a^2*(a*Sin[e + f*x])^(-2 + m))/(f*(2 - m))) - (a*Sin[e + f*x])^m/(f*m)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2592

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> With[{ff = FreeFactors[Sin[e + f*x], x]}, Dist[ff/f, Subst[Int[(
ff*x)^(m + n)/(a^2 - ff^2*x^2)^((n + 1)/2), x], x, (a*Sin[e + f*x])/ff], x]
] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)/2]
```

Rubi steps

$$\begin{aligned}\int \cot^3(e+fx)(a\sin(e+fx))^m\,dx &= \frac{\text{Subst}\left(\int x^{-3+m}\left(a^2-x^2\right)\,dx,x,a\sin(e+fx)\right)}{f}\\ &= \frac{\text{Subst}\left(\int \left(a^2x^{-3+m}-x^{-1+m}\right)\,dx,x,a\sin(e+fx)\right)}{f}\\ &= -\frac{a^2(a\sin(e+fx))^{-2+m}}{f(2-m)}-\frac{(a\sin(e+fx))^m}{fm}\end{aligned}$$

Mathematica [A] time = 0.06, size = 37, normalized size = 0.80

$$\frac{\left(m\csc^2(e+fx)-m+2\right)(a\sin(e+fx))^m}{f(m-2)m}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^3*(a*Sin[e + f*x])^m,x]
```

```
[Out] ((2 - m + m*Csc[e + f*x]^2)*(a*Sin[e + f*x])^m)/(f*(-2 + m)*m)
```

fricas [A] time = 0.44, size = 57, normalized size = 1.24

$$\frac{\left((m-2)\cos\left(fx+e\right)^2+2\right)\left(a\sin\left(fx+e\right)\right)^m}{fm^2-\left(fm^2-2\,fm\right)\cos\left(fx+e\right)^2-2\,fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(a*sin(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] ((m - 2)*cos(f*x + e)^2 + 2)*(a*sin(f*x + e))^m/(f*m^2 - (f*m^2 - 2*f*m)*co
s(f*x + e)^2 - 2*f*m)
```

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

$$\int\left(a\sin\left(fx+e\right)\right)^m\cot\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(a*sin(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^m*cot(f*x + e)^3, x)
```

maple [C] time = 1.66, size = 3161, normalized size = 68.72

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^3*(a*sin(f*x+e))^m,x)
```

```
[Out] -1/(-2+m)/f/(exp(2*I*(f*x+e))-1)^2/m*(m/(2^m)*a^m*(exp(I*(f*x+e))+1)^m*(exp
(I*(f*x+e))-1)^m/(exp(I*(Re(f*x)+Re(e)))^m)*exp(m*Im(f*x)+m*Im(e))*exp(-1/2
*I*m*csgn(I*exp(2*I*(f*x+e))-I)^3*Pi)*exp(-1/2*I*m*csgn(I*a*sin(f*x+e))^3*P
i)*exp(-1/2*I*m*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn
```

(sin(f*x+e))*csgn(a*sin(f*x+e))*csgn(I*a)*Pi)*exp(-1/2*I*Pi*m)*exp(1/2*I*m*
csgn(I*a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn(a*sin(f*x+e))*csgn(I*a*sin(f*x
+e))^2*Pi)*exp(-1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)*csgn(I*exp(I*(f*x+e))-I)
*csgn(I*exp(I*(f*x+e))+I)*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)*csgn(s
in(f*x+e))^2*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)^2*csgn(I*exp(I*(f*x
+e))-I)*Pi)*exp(1/2*I*m*csgn(sin(f*x+e))^3*Pi)*exp(1/2*I*m*csgn(a*sin(f*x+e
))^2*csgn(I*a)*Pi)*exp(1/2*I*m*csgn(a*sin(f*x+e))^3*Pi)*exp(1/2*I*m*csgn(I*
exp(2*I*(f*x+e))-I)*csgn(sin(f*x+e))*csgn(I*exp(-I*(f*x+e)))*Pi)*exp(1/2*I*
m*csgn(sin(f*x+e))^2*csgn(I*exp(-I*(f*x+e)))*Pi)*exp(1/2*I*m*csgn(a*sin(f*x
+e))*csgn(I*a*sin(f*x+e))*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)^2*csgn
(I*exp(I*(f*x+e))+I)*Pi)*exp(4*I*f*x)*exp(4*I*e)-2/(2^m)*a^m*(exp(I*(f*x+e)
)+1)^m*(exp(I*(f*x+e))-1)^m/(exp(I*(Re(f*x)+Re(e)))^m)*exp(m*Im(f*x)+m*Im(e
))*exp(-1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)^3*Pi)*exp(-1/2*I*m*csgn(I*a*sin(
f*x+e))^3*Pi)*exp(-1/2*I*m*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))^2*Pi)*exp(-1
/2*I*m*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))*csgn(I*a)*Pi)*exp(-1/2*I*Pi*m)*e
xp(1/2*I*m*csgn(I*a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn(a*sin(f*x+e))*csgn(
I*a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)*csgn(I*exp(I*
(f*x+e))-I)*csgn(I*exp(I*(f*x+e))+I)*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e)
)-I)*csgn(sin(f*x+e))^2*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)^2*csgn(I
exp(I(f*x+e))-I)*Pi)*exp(1/2*I*m*csgn(sin(f*x+e))^3*Pi)*exp(1/2*I*m*csgn(
a*sin(f*x+e))^2*csgn(I*a)*Pi)*exp(1/2*I*m*csgn(a*sin(f*x+e))^3*Pi)*exp(1/2*
I*m*csgn(I*exp(2*I*(f*x+e))-I)*csgn(sin(f*x+e))*csgn(I*exp(-I*(f*x+e)))*Pi)
*exp(1/2*I*m*csgn(sin(f*x+e))^2*csgn(I*exp(-I*(f*x+e)))*Pi)*exp(1/2*I*m*csg
n(a*sin(f*x+e))*csgn(I*a*sin(f*x+e))*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e)
)-I)^2*csgn(I*exp(I*(f*x+e))+I)*Pi)*exp(4*I*f*x)*exp(4*I*e)+2*m/(2^m)*a^m*(
exp(I*(f*x+e))+1)^m*(exp(I*(f*x+e))-1)^m/(exp(I*(Re(f*x)+Re(e)))^m)*exp(m*I
m(f*x)+m*Im(e))*exp(-1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)^3*Pi)*exp(-1/2*I*m*
csgn(I*a*sin(f*x+e))^3*Pi)*exp(-1/2*I*m*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))
^2*Pi)*exp(-1/2*I*m*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))*csgn(I*a)*Pi)*exp(-
1/2*I*Pi*m)*exp(1/2*I*m*csgn(I*a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn(a*sin(
f*x+e))*csgn(I*a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)*
csgn(I*exp(I*(f*x+e))-I)*csgn(I*exp(I*(f*x+e))+I)*Pi)*exp(1/2*I*m*csgn(I*ex
p(2*I*(f*x+e))-I)*csgn(sin(f*x+e))^2*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e)
)-I)^2*csgn(I*exp(I*(f*x+e))-I)*Pi)*exp(1/2*I*m*csgn(sin(f*x+e))^3*Pi)*exp(
1/2*I*m*csgn(a*sin(f*x+e))^2*csgn(I*a)*Pi)*exp(1/2*I*m*csgn(a*sin(f*x+e))^3
*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)*csgn(sin(f*x+e))*csgn(I*exp(-I*
(f*x+e)))*Pi)*exp(1/2*I*m*csgn(sin(f*x+e))^2*csgn(I*exp(-I*(f*x+e)))*Pi)*ex
p(1/2*I*m*csgn(a*sin(f*x+e))*csgn(I*a*sin(f*x+e))*Pi)*exp(1/2*I*m*csgn(I*ex
p(2*I*(f*x+e))-I)^2*csgn(I*exp(I*(f*x+e))+I)*Pi)*exp(2*I*f*x)*exp(2*I*e)+4/
(2^m)*a^m*(exp(I*(f*x+e))+1)^m*(exp(I*(f*x+e))-1)^m/(exp(I*(Re(f*x)+Re(e)))
^m)*exp(m*Im(f*x)+m*Im(e))*exp(-1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)^3*Pi)*ex
p(-1/2*I*m*csgn(I*a*sin(f*x+e))^3*Pi)*exp(-1/2*I*m*csgn(sin(f*x+e))*csgn(a*
sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))*csgn(I*a
)*Pi)*exp(-1/2*I*Pi*m)*exp(1/2*I*m*csgn(I*a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*
csgn(a*sin(f*x+e))*csgn(I*a*sin(f*x+e))^2*Pi)*exp(-1/2*I*m*csgn(I*exp(2*I*(

```
f*x+e))-I)*csgn(I*exp(I*(f*x+e))-I)*csgn(I*exp(I*(f*x+e))+I)*Pi)*exp(1/2*I*
m*csgn(I*exp(2*I*(f*x+e))-I)*csgn(sin(f*x+e))^2*Pi)*exp(1/2*I*m*csgn(I*exp(
2*I*(f*x+e))-I)^2*csgn(I*exp(I*(f*x+e))-I)*Pi)*exp(1/2*I*m*csgn(sin(f*x+e))
^3*Pi)*exp(1/2*I*m*csgn(a*sin(f*x+e))^2*csgn(I*a)*Pi)*exp(1/2*I*m*csgn(a*si
n(f*x+e))^3*Pi)*exp(1/2*I*m*csgn(I*exp(2*I*(f*x+e))-I)*csgn(sin(f*x+e))*csg
n(I*exp(-I*(f*x+e)))*Pi)*exp(1/2*I*m*csgn(sin(f*x+e))^2*csgn(I*exp(-I*(f*x+
e)))*Pi)*exp(1/2*I*m*csgn(a*sin(f*x+e))*csgn(I*a*sin(f*x+e))*Pi)*exp(1/2*I*
m*csgn(I*exp(2*I*(f*x+e))-I)^2*csgn(I*exp(I*(f*x+e))+I)*Pi)*exp(2*I*f*x)*ex
p(2*I*e)+m/(2^m)*a^m*(exp(I*(f*x+e))+1)^m*(exp(I*(f*x+e))-1)^m/(exp(I*(Re(f
*x)+Re(e)))^m)*exp(1/2*m*(-I*csgn(I*exp(2*I*(f*x+e))-I)*csgn(I*exp(I*(f*x+e
))-I)*csgn(I*exp(I*(f*x+e))+I)*Pi+I*csgn(a*sin(f*x+e))^2*csgn(I*a)*Pi-I*Pi-
I*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))*csgn(I*a)*Pi-I*csgn(sin(f*x+e))*csgn(
a*sin(f*x+e))^2*Pi+I*csgn(I*exp(2*I*(f*x+e))-I)*csgn(sin(f*x+e))*csgn(I*exp
(-I*(f*x+e)))*Pi+I*csgn(sin(f*x+e))^2*csgn(I*exp(-I*(f*x+e)))*Pi+I*csgn(I*e
xp(2*I*(f*x+e))-I)^2*csgn(I*exp(I*(f*x+e))-I)*Pi+I*csgn(I*exp(2*I*(f*x+e))-
I)^2*csgn(I*exp(I*(f*x+e))+I)*Pi-I*csgn(I*a*sin(f*x+e))^3*Pi+I*csgn(I*a*sin
(f*x+e))^2*Pi+I*csgn(sin(f*x+e))^3*Pi+I*csgn(a*sin(f*x+e))*csgn(I*a*sin(f*x
+e))*Pi+I*csgn(a*sin(f*x+e))^3*Pi+I*csgn(I*exp(2*I*(f*x+e))-I)*csgn(sin(f*x
+e))^2*Pi-I*csgn(I*exp(2*I*(f*x+e))-I)^3*Pi-I*csgn(a*sin(f*x+e))*csgn(I*a*s
in(f*x+e))^2*Pi+2*Im(f*x)+2*Im(e)))-2/(2^m)*a^m*(exp(I*(f*x+e))+1)^m*(exp(I
*(f*x+e))-1)^m/(exp(I*(Re(f*x)+Re(e)))^m)*exp(1/2*m*(-I*csgn(I*exp(2*I*(f*x
+e))-I)*csgn(I*exp(I*(f*x+e))-I)*csgn(I*exp(I*(f*x+e))+I)*Pi+I*csgn(a*sin(f
*x+e))^2*csgn(I*a)*Pi-I*Pi-I*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))*csgn(I*a)*
Pi-I*csgn(sin(f*x+e))*csgn(a*sin(f*x+e))^2*Pi+I*csgn(I*exp(2*I*(f*x+e))-I)*
csgn(sin(f*x+e))*csgn(I*exp(-I*(f*x+e)))*Pi+I*csgn(sin(f*x+e))^2*csgn(I*exp
(-I*(f*x+e)))*Pi+I*csgn(I*exp(2*I*(f*x+e))-I)^2*csgn(I*exp(I*(f*x+e))-I)*Pi
+I*csgn(I*exp(2*I*(f*x+e))-I)^2*csgn(I*exp(I*(f*x+e))+I)*Pi-I*csgn(I*a*sin(
f*x+e))^3*Pi+I*csgn(I*a*sin(f*x+e))^2*Pi+I*csgn(sin(f*x+e))^3*Pi+I*csgn(a*s
in(f*x+e))*csgn(I*a*sin(f*x+e))*Pi+I*csgn(a*sin(f*x+e))^3*Pi+I*csgn(I*exp(2
*I*(f*x+e))-I)*csgn(sin(f*x+e))^2*Pi-I*csgn(I*exp(2*I*(f*x+e))-I)^3*Pi-I*cs
gn(a*sin(f*x+e))*csgn(I*a*sin(f*x+e))^2*Pi+2*Im(f*x)+2*Im(e))))
```

maxima [A] time = 0.56, size = 47, normalized size = 1.02

$$-\frac{\frac{a^m \sin(fx+e)^m}{m} - \frac{a^m \sin(fx+e)^m}{(m-2)\sin(fx+e)^2}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(a*sin(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] -(a^m*sin(f*x + e)^m/m - a^m*sin(f*x + e)^m/((m - 2)*sin(f*x + e)^2))/f
```

mupad [B] time = 3.31, size = 91, normalized size = 1.98

$$-\frac{\left(a\,\sin\left(e+f\,x\right)\right)^m\,\left(m-4\sin\left(2\,e+2\,f\,x\right)^2+m\,\left(2\sin\left(2\,e+2\,f\,x\right)^2-1\right)+16\sin\left(e+f\,x\right)^2\right)}{f\,m\,\left(2\sin\left(2\,e+2\,f\,x\right)^2-8\sin\left(e+f\,x\right)^2\right)\,\left(m-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^3*(a*sin(e + f*x))^m,x)
```

```
[Out] -((a*sin(e + f*x))^m*(m - 4*sin(2*e + 2*f*x)^2 + m*(2*sin(2*e + 2*f*x)^2 -
1) + 16*sin(e + f*x)^2))/(f*m*(2*sin(2*e + 2*f*x)^2 - 8*sin(e + f*x)^2)*(m
- 2))
```

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

$$\int\left(a\sin\left(e+fx\right)\right)^m\cot^3\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**3*(a*sin(f*x+e))**m,x)
```

```
[Out] Integral((a*sin(e + f*x))**m*cot(e + f*x)**3, x)
```

3.165 $\int \cot^5(e+fx)(a\sin(e+fx))^m\,dx$

Optimal. Leaf size=72

$$-\frac{a^4(a\sin(e+fx))^{m-4}}{f(4-m)}+\frac{2a^2(a\sin(e+fx))^{m-2}}{f(2-m)}+\frac{(a\sin(e+fx))^m}{fm}$$

```
[Out] -a^4*(a*sin(f*x+e))^(-4+m)/f/(4-m)+2*a^2*(a*sin(f*x+e))^(-2+m)/f/(2-m)+(a*s
in(f*x+e))^m/f/m
```

Rubi [A] time = 0.06, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2592, 270}

$$-\frac{a^4(a\sin(e+fx))^{m-4}}{f(4-m)}+\frac{2a^2(a\sin(e+fx))^{m-2}}{f(2-m)}+\frac{(a\sin(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^5*(a*Sin[e + f*x])^m,x]
```

```
[Out] -((a^4*(a*Sin[e + f*x])^(-4 + m))/(f*(4 - m))) + (2*a^2*(a*Sin[e + f*x])^(-
2 + m))/(f*(2 - m)) + (a*Sin[e + f*x])^m/(f*m)
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2592

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*tan[(e_.) + (f_.)*(x_)]^(n_.), x_
Symbol] :> With[{ff = FreeFactors[Sin[e + f*x], x]}, Dist[ff/f, Subst[Int[(
ff*x)^(m + n)/(a^2 - ff^2*x^2)^((n + 1)/2), x], x, (a*Sin[e + f*x])/ff], x]
] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n + 1)/2]
```

Rubi steps

$$\int \cot^5(e+fx)(a\sin(e+fx))^m\,dx = \frac{\text{Subst}\left(\int x^{-5+m}\left(a^2-x^2\right)^2\,dx,x,a\sin(e+fx)\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \left(a^4x^{-5+m}-2a^2x^{-3+m}+x^{-1+m}\right)dx,x,a\sin(e+fx)\right)}{f}$$
$$= -\frac{a^4(a\sin(e+fx))^{-4+m}}{f(4-m)}+\frac{2a^2(a\sin(e+fx))^{-2+m}}{f(2-m)}+\frac{(a\sin(e+fx))^m}{fm}$$

Mathematica [A] time = 0.33, size = 62, normalized size = 0.86

$$\frac{\left((m-2)m\csc^4(e+fx)-2(m-4)m\csc^2(e+fx)+m^2-6m+8\right)(a\sin(e+fx))^m}{f(m-4)(m-2)m}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^5*(a*Sin[e + f*x])^m,x]
```

```
[Out] ((8 - 6*m + m^2 - 2*(-4 + m)*m*Csc[e + f*x]^2 + (-2 + m)*m*Csc[e + f*x]^4)*
(a*Sin[e + f*x])^m)/(f*(-4 + m)*(-2 + m)*m)
```

fricas [A] time = 0.44, size = 112, normalized size = 1.56

$$\frac{\left(\left(m^2-6\,m+8\right)\cos\left(fx+e\right)^4+4\,(m-4)\cos\left(fx+e\right)^2+8\right)\left(a\sin\left(fx+e\right)\right)^m}{\left(fm^3-6\,fm^2+8\,fm\right)\cos\left(fx+e\right)^4+fm^3-6\,fm^2-2\left(fm^3-6\,fm^2+8\,fm\right)\cos\left(fx+e\right)^2+8\,fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5*(a*sin(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] ((m^2 - 6*m + 8)*cos(f*x + e)^4 + 4*(m - 4)*cos(f*x + e)^2 + 8)*(a*sin(f*x
+ e))^m/((f*m^3 - 6*f*m^2 + 8*f*m)*cos(f*x + e)^4 + f*m^3 - 6*f*m^2 - 2*(f*
m^3 - 6*f*m^2 + 8*f*m)*cos(f*x + e)^2 + 8*f*m)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^m\cot\left(fx+e\right)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5*(a*sin(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^m*cot(f*x + e)^5, x)
```

maple [C] time = 1.27, size = 7964, normalized size = 110.61

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^5*(a*sin(f*x+e))^m,x)
```

```
[Out] result too large to display
```

maxima [A] time = 0.63, size = 71, normalized size = 0.99

$$\frac{\frac{a^m \sin\left(fx+e\right)^m}{m} - \frac{2\,a^m \sin\left(fx+e\right)^m}{(m-2)\sin\left(fx+e\right)^2} + \frac{a^m \sin\left(fx+e\right)^m}{(m-4)\sin\left(fx+e\right)^4}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5*(a*sin(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] (a^m*sin(f*x + e)^m/m - 2*a^m*sin(f*x + e)^m/((m - 2)*sin(f*x + e)^2) + a^m
*sin(f*x + e)^m/((m - 4)*sin(f*x + e)^4))/f
```

mupad [B] time = 7.57, size = 219, normalized size = 3.04

$$-\frac{\left(a\,\sin\left(e+f\,x\right)\right)^m\,\left(2\sin\left(2\,e+2\,f\,x\right)^2+\sin\left(4\,e+4\,f\,x\right)\,1\mathrm{i}-1\right)\,\left(-\frac{2\left(2\sin\left(2\,e+2\,f\,x\right)^2-1\right)\left(-2\sin\left(2\,e+2\,f\,x\right)^2+\sin\left(4\,e+4\,f\right.\right.}{f\,m}\right.}{16\,\mathrm{si}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^5*(a*sin(e + f*x))^m,x)
```

```
[Out] -((a*sin(e + f*x))^m*(sin(4*e + 4*f*x)*1i + 2*sin(2*e + 2*f*x)^2 - 1)*(((si
n(4*e + 4*f*x)*1i - 2*sin(2*e + 2*f*x)^2 + 1)*(6*m^2 - 4*m + 48))/(f*m*(m^2
 - 6*m + 8)) - (2*(2*sin(2*e + 2*f*x)^2 - 1)*(sin(4*e + 4*f*x)*1i - 2*sin(2
*e + 2*f*x)^2 + 1))/(f*m) + (2*(2*sin(e + f*x)^2 - 1)*(sin(4*e + 4*f*x)*1i
- 2*sin(2*e + 2*f*x)^2 + 1)*(8*m - 4*m^2 + 32))/(f*m*(m^2 - 6*m + 8))))/(16
*sin(e + f*x)^4)
```

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

$$\int \left(a\sin\left(e+fx\right)\right)^m \cot^5\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**5*(a*sin(f*x+e))**m,x)
```

```
[Out] Integral((a*sin(e + f*x))**m*cot(e + f*x)**5, x)
```

3.166 $\int (a\sin(e+fx))^m \tan^4(e+fx)\,dx$

Optimal. Leaf size=68

$$\frac{\sqrt{\cos^2(e+fx)}\,\sec(e+fx)(a\sin(e+fx))^{m+5}\,{}_2F_1\left(\frac{5}{2},\frac{m+5}{2};\frac{m+7}{2};\sin^2(e+fx)\right)}{a^5f(m+5)}$$

```
[Out] hypergeom([5/2, 5/2+1/2*m],[7/2+1/2*m],sin(f*x+e)^2)*sec(f*x+e)*(a*sin(f*x+
e))^(5+m)*(cos(f*x+e)^2)^(1/2)/a^5/f/(5+m)
```

Rubi [A] time = 0.09, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2600, 2577}

$$\frac{\sqrt{\cos^2(e+fx)}\,\sec(e+fx)(a\sin(e+fx))^{m+5}\,{}_2F_1\left(\frac{5}{2},\frac{m+5}{2};\frac{m+7}{2};\sin^2(e+fx)\right)}{a^5f(m+5)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m*Tan[e + f*x]^4,x]
```

```
[Out] (Sqrt[Cos[e + f*x]^2]*Hypergeometric2F1[5/2, (5 + m)/2, (7 + m)/2, Sin[e +
f*x]^2]*Sec[e + f*x]*(a*Sin[e + f*x])^(5 + m))/(a^5*f*(5 + m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2600

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*tan[(e_.) + (f_.)*(x_)]^(n_), x_Sy
mbol] :> Dist[1/a^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /;
 FreeQ[{a, e, f, m}, x] && IntegerQ[n] && !IntegerQ[m]
```

Rubi steps

$$\int (a\sin(e+fx))^m \tan^4(e+fx)\,dx = \frac{\int \sec^4(e+fx)(a\sin(e+fx))^{4+m}\,dx}{a^4}$$
$$= \frac{\sqrt{\cos^2(e+fx)}\ {}_2F_1\left(\frac{5}{2},\frac{5+m}{2};\frac{7+m}{2};\sin^2(e+fx)\right)\sec(e+fx)(a\sin(e+fx))^{5+}}{a^5 f(5+m)}$$

Mathematica [A] time = 0.14, size = 71, normalized size = 1.04

$$\frac{\sin^4(e+fx)\sqrt{\cos^2(e+fx)}\ \tan(e+fx)(a\sin(e+fx))^m\,{}_2F_1\left(\frac{5}{2},\frac{m+5}{2};\frac{m+7}{2};\sin^2(e+fx)\right)}{f(m+5)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m*Tan[e + f*x]^4,x]
[Out] (Sqrt[Cos[e + f*x]^2]*Hypergeometric2F1[5/2, (5 + m)/2, (7 + m)/2, Sin[e +
f*x]^2]*Sin[e + f*x]^4*(a*Sin[e + f*x])^m*Tan[e + f*x])/(f*(5 + m))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sin\left(fx+e\right)\right)^m\tan\left(fx+e\right)^4, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^4,x, algorithm="fricas")
[Out] integral((a*sin(f*x + e))^m*tan(f*x + e)^4, x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^m\tan\left(fx+e\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^4,x, algorithm="giac")
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e)^4, x)
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \left(a\sin\left(fx+e\right)\right)^m\left(\tan^4\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m*tan(f*x+e)^4,x)
```

```
[Out] int((a*sin(f*x+e))^m*tan(f*x+e)^4,x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e)^4, x)
```

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

$$\int \tan\left(e+f\,x\right)^{4}\,\left(a\,\sin\left(e+f\,x\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(a*sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)^4*(a*sin(e + f*x))^m, x)
```

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

$$\int \left(a\sin\left(e+fx\right)\right)^{m}\tan^{4}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m*tan(f*x+e)**4,x)
```

```
[Out] Integral((a*sin(e + f*x))**m*tan(e + f*x)**4, x)
```

3.167 $\int (a\sin(e+fx))^m \tan^2(e+fx)\,dx$

Optimal. Leaf size=68

$$\frac{\sqrt{\cos^2(e+fx)}\,\sec(e+fx)(a\sin(e+fx))^{m+3}\,{}_2F_1\left(\frac{3}{2},\frac{m+3}{2};\frac{m+5}{2};\sin^2(e+fx)\right)}{a^3f(m+3)}$$

```
[Out] hypergeom([3/2, 3/2+1/2*m],[5/2+1/2*m],sin(f*x+e)^2)*sec(f*x+e)*(a*sin(f*x+
e))^(3+m)*(cos(f*x+e)^2)^(1/2)/a^3/f/(3+m)
```

Rubi [A] time = 0.09, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2600, 2577}

$$\frac{\sqrt{\cos^2(e+fx)}\,\sec(e+fx)(a\sin(e+fx))^{m+3}\,{}_2F_1\left(\frac{3}{2},\frac{m+3}{2};\frac{m+5}{2};\sin^2(e+fx)\right)}{a^3f(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m*Tan[e + f*x]^2,x]
```

```
[Out] (Sqrt[Cos[e + f*x]^2]*Hypergeometric2F1[3/2, (3 + m)/2, (5 + m)/2, Sin[e +
f*x]^2]*Sec[e + f*x]*(a*Sin[e + f*x])^(3 + m))/(a^3*f*(3 + m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2600

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*tan[(e_.) + (f_.)*(x_)]^(n_), x_Sy
mbol] :> Dist[1/a^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /;
 FreeQ[{a, e, f, m}, x] && IntegerQ[n] && !IntegerQ[m]
```

Rubi steps

$$\int (a\sin(e+fx))^m \tan^2(e+fx)\,dx = \frac{\int \sec^2(e+fx)(a\sin(e+fx))^{2+m}\,dx}{a^2}$$
$$= \frac{\sqrt{\cos^2(e+fx)}\;{}_2F_1\left(\frac{3}{2},\frac{3+m}{2};\frac{5+m}{2};\sin^2(e+fx)\right)\sec(e+fx)(a\sin(e+fx))^3}{a^3f(3+m)}$$

Mathematica [A] time = 0.09, size = 71, normalized size = 1.04

$$\frac{\sin^2(e+fx)\sqrt{\cos^2(e+fx)}\,\tan(e+fx)(a\sin(e+fx))^m\,{}_2F_1\left(\frac{3}{2},\frac{m+3}{2};\frac{m+5}{2};\sin^2(e+fx)\right)}{f(m+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m*Tan[e + f*x]^2,x]
[Out] (Sqrt[Cos[e + f*x]^2]*Hypergeometric2F1[3/2, (3 + m)/2, (5 + m)/2, Sin[e +
f*x]^2]*Sin[e + f*x]^2*(a*Sin[e + f*x])^m*Tan[e + f*x])/(f*(3 + m))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sin\left(fx+e\right)\right)^m\tan\left(fx+e\right)^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^2,x, algorithm="fricas")
[Out] integral((a*sin(f*x + e))^m*tan(f*x + e)^2, x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^m\tan\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^2,x, algorithm="giac")
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e)^2, x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \left(a\sin\left(fx+e\right)\right)^m\left(\tan^2\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m*tan(f*x+e)^2,x)
```

```
[Out] int((a*sin(f*x+e))^m*tan(f*x+e)^2,x)
```

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

$$\int \left(a \sin\left(fx+e\right)\right)^{m} \tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^m*tan(f*x + e)^2, x)
```

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

$$\int \tan\left(e+f\,x\right)^{2}\,\left(a\,\sin\left(e+f\,x\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(a*sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)^2*(a*sin(e + f*x))^m, x)
```

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

$$\int \left(a \sin\left(e+fx\right)\right)^{m} \tan^{2}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m*tan(f*x+e)**2,x)
```

```
[Out] Integral((a*sin(e + f*x))**m*tan(e + f*x)**2, x)
```

3.168 $\int \cot^2(e+fx)(a\sin(e+fx))^m\,dx$

Optimal. Leaf size=69

$$-\frac{a\cos(e+fx)(a\sin(e+fx))^{m-1}\,{}_2F_1\left(-\frac{1}{2},\frac{m-1}{2};\frac{m+1}{2};\sin^2(e+fx)\right)}{f(1-m)\sqrt{\cos^2(e+fx)}}$$

```
[Out] -a*cos(f*x+e)*hypergeom([-1/2, -1/2+1/2*m],[1/2+1/2*m],sin(f*x+e)^2)*(a*sin
(f*x+e))^(-1+m)/f/(1-m)/(cos(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2600, 2577}

$$-\frac{a\cos(e+fx)(a\sin(e+fx))^{m-1}\,{}_2F_1\left(-\frac{1}{2},\frac{m-1}{2};\frac{m+1}{2};\sin^2(e+fx)\right)}{f(1-m)\sqrt{\cos^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^2*(a*Sin[e + f*x])^m,x]
```

```
[Out] -((a*Cos[e + f*x]*Hypergeometric2F1[-1/2, (-1 + m)/2, (1 + m)/2, Sin[e + f*
x]^2]*(a*Sin[e + f*x])^(-1 + m))/(f*(1 - m)*Sqrt[Cos[e + f*x]^2]))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2600

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*tan[(e_.) + (f_.)*(x_)]^(n_), x_Sy
mbol] :> Dist[1/a^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /;
 FreeQ[{a, e, f, m}, x] && IntegerQ[n] &&  !IntegerQ[m]
```

Rubi steps

$$\int \cot^2(e+fx)(a\sin(e+fx))^m\,dx = a^2\int \cos^2(e+fx)(a\sin(e+fx))^{-2+m}\,dx$$
$$= -\frac{a\cos(e+fx)\,{}_2F_1\left(-\frac{1}{2},\frac{1}{2}(-1+m);\frac{1+m}{2};\sin^2(e+fx)\right)(a\sin(e+fx))^{-1+m}}{f(1-m)\sqrt{\cos^2(e+fx)}}$$

Mathematica [A] time = 0.08, size = 66, normalized size = 0.96

$$\frac{a\sqrt{\cos^2(e+fx)}\,\sec(e+fx)(a\sin(e+fx))^{m-1}\,{}_2F_1\left(-\frac{1}{2},\frac{m-1}{2};\frac{m+1}{2};\sin^2(e+fx)\right)}{f(m-1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^2*(a*Sin[e + f*x])^m,x]
```

```
[Out] (a*Sqrt[Cos[e + f*x]^2]*Hypergeometric2F1[-1/2, (-1 + m)/2, (1 + m)/2, Sin[
e + f*x]^2]*Sec[e + f*x]*(a*Sin[e + f*x])^(-1 + m))/(f*(-1 + m))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sin\left(fx+e\right)\right)^m\cot\left(fx+e\right)^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(a*sin(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] integral((a*sin(f*x + e))^m*cot(f*x + e)^2, x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^m\cot\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(a*sin(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^m*cot(f*x + e)^2, x)
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \left(\cot^2\left(fx+e\right)\right)\left(a\sin\left(fx+e\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^2*(a*sin(f*x+e))^m,x)
[Out] int(cot(f*x+e)^2*(a*sin(f*x+e))^m,x)
```

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

$$\int \left(a \sin\left(fx+e\right)\right)^{m} \cot\left(fx+e\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(a*sin(f*x+e))^m,x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^m*cot(f*x + e)^2, x)
```

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

$$\int \cot\left(e+f\,x\right)^{2}\,\left(a\,\sin\left(e+f\,x\right)\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^2*(a*sin(e + f*x))^m,x)
[Out] int(cot(e + f*x)^2*(a*sin(e + f*x))^m, x)
```

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

$$\int \left(a \sin\left(e+fx\right)\right)^{m} \cot^{2}\left(e+fx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**2*(a*sin(f*x+e))**m,x)
[Out] Integral((a*sin(e + f*x))**m*cot(e + f*x)**2, x)
```

3.169 $\int \cot^4(e+fx)(a\sin(e+fx))^m\,dx$

Optimal. Leaf size=71

$$-\frac{a^3\cos(e+fx)(a\sin(e+fx))^{m-3}\,{}_2F_1\left(-\frac{3}{2},\frac{m-3}{2};\frac{m-1}{2};\sin^2(e+fx)\right)}{f(3-m)\sqrt{\cos^2(e+fx)}}$$

```
[Out] -a^3*cos(f*x+e)*hypergeom([-3/2, -3/2+1/2*m],[-1/2+1/2*m],sin(f*x+e)^2)*(a*
sin(f*x+e))^(-3+m)/f/(3-m)/(cos(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2600, 2577}

$$-\frac{a^3\cos(e+fx)(a\sin(e+fx))^{m-3}\,{}_2F_1\left(-\frac{3}{2},\frac{m-3}{2};\frac{m-1}{2};\sin^2(e+fx)\right)}{f(3-m)\sqrt{\cos^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^4*(a*Sin[e + f*x])^m,x]
```

```
[Out] -((a^3*Cos[e + f*x]*Hypergeometric2F1[-3/2, (-3 + m)/2, (-1 + m)/2, Sin[e +
 f*x]^2]*(a*Sin[e + f*x])^(-3 + m))/(f*(3 - m)*Sqrt[Cos[e + f*x]^2]))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2600

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*tan[(e_.) + (f_.)*(x_)]^(n_), x_Sy
mbol] :> Dist[1/a^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /;
 FreeQ[{a, e, f, m}, x] && IntegerQ[n] && !IntegerQ[m]
```

Rubi steps

$$\int \cot^4(e+fx)(a\sin(e+fx))^m\,dx = a^4\int \cos^4(e+fx)(a\sin(e+fx))^{-4+m}\,dx$$
$$= -\frac{a^3\cos(e+fx)\,{}_2F_1\left(-\frac{3}{2},\frac{1}{2}(-3+m);\frac{1}{2}(-1+m);\sin^2(e+fx)\right)(a\sin(e+f$$
$$f(3-m)\sqrt{\cos^2(e+fx)}$$

Mathematica [A] time = 0.07, size = 71, normalized size = 1.00

$$\frac{\sqrt{\cos^2(e+fx)}\,\csc^3(e+fx)\sec(e+fx)(a\sin(e+fx))^m\,{}_2F_1\left(-\frac{3}{2},\frac{m-3}{2};\frac{m-1}{2};\sin^2(e+fx)\right)}{f(m-3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^4*(a*Sin[e + f*x])^m,x]
```

```
[Out] (Sqrt[Cos[e + f*x]^2]*Csc[e + f*x]^3*Hypergeometric2F1[-3/2, (-3 + m)/2, (-
1 + m)/2, Sin[e + f*x]^2]*Sec[e + f*x]*(a*Sin[e + f*x])^m)/(f*(-3 + m))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sin\left(fx+e\right)\right)^m\cot\left(fx+e\right)^4, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(a*sin(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] integral((a*sin(f*x + e))^m*cot(f*x + e)^4, x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^m\cot\left(fx+e\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(a*sin(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^m*cot(f*x + e)^4, x)
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \left(\cot^4\left(fx+e\right)\right)\left(a\sin\left(fx+e\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^4*(a*sin(f*x+e))^m,x)
```

```
[Out] int(cot(f*x+e)^4*(a*sin(f*x+e))^m,x)
```

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

$$\int \left(a \sin \left(f x+e\right)\right)^{m} \cot \left(f x+e\right)^{4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(a*sin(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] integrate((a*sin(f*x + e))^m*cot(f*x + e)^4, x)
```

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

$$\int \cot \left(e+f\,x\right)^4\,{\left(a\,\sin \left(e+f\,x\right)\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^4*(a*sin(e + f*x))^m,x)
```

```
[Out] int(cot(e + f*x)^4*(a*sin(e + f*x))^m, x)
```

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

$$\int \left(a \sin{\left(e + f x \right)}\right)^{m} \cot^{4}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**4*(a*sin(f*x+e))**m,x)
```

```
[Out] Integral((a*sin(e + f*x))**m*cot(e + f*x)**4, x)
```

3.170 $\int (a\sin(e+fx))^m (b\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=79

$$\frac{2\cos^2(e+fx)^{5/4}(b\tan(e+fx))^{5/2}(a\sin(e+fx))^m\,{}_2F_1\left(\frac{5}{4},\frac{1}{4}(2m+5);\frac{1}{4}(2m+9);\sin^2(e+fx)\right)}{bf(2m+5)}$$

```
[Out] 2*(cos(f*x+e)^2)^(5/4)*hypergeom([5/4, 5/4+1/2*m],[9/4+1/2*m],sin(f*x+e)^2)
*(a*sin(f*x+e))^m*(b*tan(f*x+e))^(5/2)/b/f/(5+2*m)
```

Rubi [A] time = 0.12, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$\frac{2\cos^2(e+fx)^{5/4}(b\tan(e+fx))^{5/2}(a\sin(e+fx))^m\,{}_2F_1\left(\frac{5}{4},\frac{1}{4}(2m+5);\frac{1}{4}(2m+9);\sin^2(e+fx)\right)}{bf(2m+5)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(5/4)*Hypergeometric2F1[5/4, (5 + 2*m)/4, (9 + 2*m)/4,
Sin[e + f*x]^2]*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(5/2))/(b*f*(5 + 2*m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int (a\sin(e+fx))^m(b\tan(e+fx))^{3/2}\,dx = \frac{\left(a\cos^{\frac{5}{2}}(e+fx)(b\tan(e+fx))^{5/2}\right)\int \frac{(a\sin(e+fx))^{\frac{3}{2}+m}}{\cos^{\frac{3}{2}}(e+fx)}\,dx}{b(a\sin(e+fx))^{5/2}}$$
$$= \frac{2\cos^2(e+fx)^{5/4}\,{}_2F_1\left(\frac{5}{4},\frac{1}{4}(5+2m);\frac{1}{4}(9+2m);\sin^2(e+fx)\right)(a\sin(e+}{bf(5+2m)}$$

Mathematica [A] time = 8.14, size = 87, normalized size = 1.10

$$\frac{2(b\tan(e+fx))^{5/2}\sec^2(e+fx)^{m/2}(a\sin(e+fx))^m\,{}_2F_1\left(\frac{m+2}{2},\frac{1}{4}(2m+5);\frac{1}{4}(2m+9);-\tan^2(e+fx)\right)}{bf(2m+5)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(3/2),x]
[Out] (2*Hypergeometric2F1[(2 + m)/2, (5 + 2*m)/4, (9 + 2*m)/4, -Tan[e + f*x]^2]*
(Sec[e + f*x]^2)^(m/2)*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(5/2))/(b*f*(5 +
 2*m))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\tan\left(fx+e\right)}\,\left(a\sin\left(fx+e\right)\right)^m b\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
[Out] integral(sqrt(b*tan(f*x + e))*(a*sin(f*x + e))^m*b*tan(f*x + e), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^(3/2),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int\left(a\sin\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m*(b*tan(f*x+e))^(3/2),x)
[Out] int((a*sin(f*x+e))^m*(b*tan(f*x+e))^(3/2),x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\left(a\sin\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^(3/2)*(a*sin(f*x + e))^m, x)
```

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

$$\int {\left(a\,\sin\left(e+f\,x\right)\right)}^m\,{\left(b\,\tan\left(e+f\,x\right)\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^m*(b*tan(e + f*x))^(3/2),x)
[Out] int((a*sin(e + f*x))^m*(b*tan(e + f*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m*(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.171 $\int (a\sin(e+fx))^m\sqrt{b\tan(e+fx)}\,dx$

Optimal. Leaf size=79

$$\frac{2\cos^2(e+fx)^{3/4}(b\tan(e+fx))^{3/2}(a\sin(e+fx))^m\,{}_2F_1\left(\frac{3}{4},\frac{1}{4}(2m+3);\frac{1}{4}(2m+7);\sin^2(e+fx)\right)}{bf(2m+3)}$$

```
[Out] 2*(cos(f*x+e)^2)^(3/4)*hypergeom([3/4, 3/4+1/2*m],[7/4+1/2*m],sin(f*x+e)^2)
*(a*sin(f*x+e))^m*(b*tan(f*x+e))^(3/2)/b/f/(3+2*m)
```

Rubi [A] time = 0.10, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$\frac{2\cos^2(e+fx)^{3/4}(b\tan(e+fx))^{3/2}(a\sin(e+fx))^m\,{}_2F_1\left(\frac{3}{4},\frac{1}{4}(2m+3);\frac{1}{4}(2m+7);\sin^2(e+fx)\right)}{bf(2m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(3/4)*Hypergeometric2F1[3/4, (3 + 2*m)/4, (7 + 2*m)/4,
Sin[e + f*x]^2]*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(3/2))/(b*f*(3 + 2*m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int (a\sin(e+fx))^m\sqrt{b\tan(e+fx)}\,dx = \frac{\left(a\cos^{\frac{3}{2}}(e+fx)(b\tan(e+fx))^{3/2}\right)\int \frac{(a\sin(e+fx))^{\frac{1}{2}+m}}{\sqrt{\cos(e+fx)}}\,dx}{b(a\sin(e+fx))^{3/2}}$$
$$= \frac{2\cos^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{3}{4},\frac{1}{4}(3+2m);\frac{1}{4}(7+2m);\sin^2(e+fx)\right)(a\sin(e+}{bf(3+2m)}$$

Mathematica [A] time = 3.24, size = 87, normalized size = 1.10

$$\frac{2(b\tan(e+fx))^{3/2}\sec^2(e+fx)^{m/2}(a\sin(e+fx))^m\,{}_2F_1\left(\frac{m+2}{2},\frac{1}{4}(2m+3);\frac{1}{4}(2m+7);-\tan^2(e+fx)\right)}{bf(2m+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m*Sqrt[b*Tan[e + f*x]],x]
[Out] (2*Hypergeometric2F1[(2 + m)/2, (3 + 2*m)/4, (7 + 2*m)/4, -Tan[e + f*x]^2]*
(Sec[e + f*x]^2)^(m/2)*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(3/2))/(b*f*(3 +
 2*m))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{b\tan\left(fx+e\right)}\,\left(a\sin\left(fx+e\right)\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(b*tan(f*x + e))*(a*sin(f*x + e))^m, x)
```

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

$$\int \sqrt{b\tan\left(fx+e\right)}\,\left(a\sin\left(fx+e\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(b*tan(f*x + e))*(a*sin(f*x + e))^m, x)
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \left(a \sin \left(f x+e\right)\right)^{m} \sqrt{b \tan \left(f x+e\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m*(b*tan(f*x+e))^(1/2),x)
[Out] int((a*sin(f*x+e))^m*(b*tan(f*x+e))^(1/2),x)
```

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

$$\int \sqrt{b \tan \left(f x+e\right)} \left(a \sin \left(f x+e\right)\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*tan(f*x + e))*(a*sin(f*x + e))^m, x)
```

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

$$\int {\left(a\,\sin\left(e+f\,x\right)\right)}^m\,\sqrt{b\,\tan\left(e+f\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^m*(b*tan(e + f*x))^(1/2),x)
[Out] int((a*sin(e + f*x))^m*(b*tan(e + f*x))^(1/2), x)
```

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

$$\int \left(a \sin{\left(e + f x \right)}\right)^{m} \sqrt{b \tan{\left(e + f x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m*(b*tan(f*x+e))**(1/2),x)
[Out] Integral((a*sin(e + f*x))**m*sqrt(b*tan(e + f*x)), x)
```

3.172 $\int \frac{(a\sin(e+fx))^m}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=79

$$\frac{2\sqrt[4]{\cos^2(e+fx)}\,\sqrt{b\tan(e+fx)}\,(a\sin(e+fx))^m\,{}_2F_1\left(\frac{1}{4},\frac{1}{4}(2m+1);\frac{1}{4}(2m+5);\sin^2(e+fx)\right)}{bf(2m+1)}$$

```
[Out] 2*(cos(f*x+e)^2)^(1/4)*hypergeom([1/4, 1/4+1/2*m],[5/4+1/2*m],sin(f*x+e)^2)
*(a*sin(f*x+e))^m*(b*tan(f*x+e))^(1/2)/b/f/(1+2*m)
```

Rubi [A] time = 0.10, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$\frac{2\sqrt[4]{\cos^2(e+fx)}\,\sqrt{b\tan(e+fx)}\,(a\sin(e+fx))^m\,{}_2F_1\left(\frac{1}{4},\frac{1}{4}(2m+1);\frac{1}{4}(2m+5);\sin^2(e+fx)\right)}{bf(2m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(1/4)*Hypergeometric2F1[1/4, (1 + 2*m)/4, (5 + 2*m)/4,
Sin[e + f*x]^2]*(a*Sin[e + f*x])^m*Sqrt[b*Tan[e + f*x]])/(b*f*(1 + 2*m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^m}{\sqrt{b\tan(e+fx)}}\,dx = \frac{\left(a\sqrt{\cos(e+fx)}\sqrt{b\tan(e+fx)}\right)\int \sqrt{\cos(e+fx)}\,(a\sin(e+fx))^{-\frac{1}{2}+m}\,dx}{b\sqrt{a\sin(e+fx)}}$$

$$= \frac{2\sqrt[4]{\cos^2(e+fx)}\;{}_2F_1\left(\frac{1}{4},\frac{1}{4}(1+2m);\frac{1}{4}(5+2m);\sin^2(e+fx)\right)(a\sin(e+fx))^m\sqrt{b\tan(e+
}{bf(1+2m)}$$

Mathematica [A] time = 3.03, size = 87, normalized size = 1.10

$$\frac{2\sqrt{b\tan(e+fx)}\;\sec^2(e+fx)^{m/2}(a\sin(e+fx))^m\;{}_2F_1\left(\frac{m+2}{2},\frac{1}{4}(2m+1);\frac{1}{4}(2m+5);-\tan^2(e+fx)\right)}{bf(2m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (2*Hypergeometric2F1[(2 + m)/2, (1 + 2*m)/4, (5 + 2*m)/4, -Tan[e + f*x]^2]*
(Sec[e + f*x]^2)^(m/2)*(a*Sin[e + f*x])^m*Sqrt[b*Tan[e + f*x]])/(b*f*(1 + 2
*m))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\tan\left(fx+e\right)}\,\left(a\sin\left(fx+e\right)\right)^m}{b\tan\left(fx+e\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*tan(f*x + e))*(a*sin(f*x + e))^m/(b*tan(f*x + e)), x)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^m}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^m/sqrt(b*tan(f*x + e)), x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{\left(a \sin\left(fx+e\right)\right)^{m}}{\sqrt{b \tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m/(b*tan(f*x+e))^(1/2),x)
[Out] int((a*sin(f*x+e))^m/(b*tan(f*x+e))^(1/2),x)
```

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

$$\int \frac{\left(a \sin\left(fx+e\right)\right)^{m}}{\sqrt{b \tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^m/sqrt(b*tan(f*x + e)), x)
```

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

$$\int \frac{\left(a\,\sin\left(e+f\,x\right)\right)^{m}}{\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^m/(b*tan(e + f*x))^(1/2),x)
[Out] int((a*sin(e + f*x))^m/(b*tan(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(a \sin\left(e+fx\right)\right)^{m}}{\sqrt{b \tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m/(b*tan(f*x+e))**(1/2),x)
[Out] Integral((a*sin(e + f*x))**m/sqrt(b*tan(e + f*x)), x)
```

3.173 $\int \frac{(a\sin(e+fx))^m}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{2(a\sin(e+fx))^m\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4}(2m-1);\frac{1}{4}(2m+3);\sin^2(e+fx)\right)}{bf(1-2m)\sqrt[4]{\cos^2(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

```
[Out] -2*hypergeom([-1/4, -1/4+1/2*m],[3/4+1/2*m],sin(f*x+e)^2)*(a*sin(f*x+e))^m/
b/f/(1-2*m)/(cos(f*x+e)^2)^(1/4)/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$-\frac{2(a\sin(e+fx))^m\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4}(2m-1);\frac{1}{4}(2m+3);\sin^2(e+fx)\right)}{bf(1-2m)\sqrt[4]{\cos^2(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*Hypergeometric2F1[-1/4, (-1 + 2*m)/4, (3 + 2*m)/4, Sin[e + f*x]^2]*(a*S
in[e + f*x])^m)/(b*f*(1 - 2*m)*(Cos[e + f*x]^2)^(1/4)*Sqrt[b*Tan[e + f*x]])
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{(a\sin(e+fx))^m}{(b\tan(e+fx))^{3/2}}\,dx = \frac{\left(a\sqrt{a\sin(e+fx)}\right)\int \cos^{\frac{3}{2}}(e+fx)(a\sin(e+fx))^{-\frac{3}{2}+m}\,dx}{b\sqrt{\cos(e+fx)}\,\sqrt{b\tan(e+fx)}}$$
$$= -\frac{2\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4}(-1+2m);\frac{1}{4}(3+2m);\sin^2(e+fx)\right)(a\sin(e+fx))^m}{bf(1-2m)\sqrt[4]{\cos^2(e+fx)}\,\sqrt{b\tan(e+fx)}}$$

Mathematica [B] time = 5.16, size = 225, normalized size = 2.85

$$\frac{\sec^4(e+fx)\sec^2(e+fx)^{\frac{m-4}{2}}(a\sin(e+fx))^m\left({}_2F_1\left(\frac{m}{2},\frac{1}{4}(2m-1);\frac{1}{4}(2m+3);-\tan^2(e+fx)\right)+\frac{\cos(2(e+fx))\sec^2(e+\cdots}{\cdots}\right.}{bf(2m-1)\sqrt{b\tan(e+\cdots}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sin[e + f*x])^m/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (Sec[e + f*x]^4*(Sec[e + f*x]^2)^((-4 + m)/2)*(a*Sin[e + f*x])^m*(Hypergeom
etric2F1[m/2, (-1 + 2*m)/4, (3 + 2*m)/4, -Tan[e + f*x]^2] + (Cos[2*(e + f*x
)]*Sec[e + f*x]^2*(-((3 + 2*m)*Hypergeometric2F1[(2 + m)/2, (-1 + 2*m)/4, (
3 + 2*m)/4, -Tan[e + f*x]^2]) + (-1 + 2*m)*Hypergeometric2F1[(2 + m)/2, (3
+ 2*m)/4, (7 + 2*m)/4, -Tan[e + f*x]^2]*Tan[e + f*x]^2))/((3 + 2*m)*(-1 + T
an[e + f*x]^2))))/(b*f*(-1 + 2*m)*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\tan\left(fx+e\right)}\left(a\sin\left(fx+e\right)\right)^m}{b^2\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*tan(f*x + e))*(a*sin(f*x + e))^m/(b^2*tan(f*x + e)^2), x)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)\right)^m}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
[Out] integrate((a*sin(f*x + e))^m/(b*tan(f*x + e))^(3/2), x)
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{\left(a \sin \left(f x+e\right)\right)^{m}}{\left(b \tan \left(f x+e\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m/(b*tan(f*x+e))^(3/2),x)
[Out] int((a*sin(f*x+e))^m/(b*tan(f*x+e))^(3/2),x)
```

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

$$\int \frac{\left(a \sin \left(f x+e\right)\right)^{m}}{\left(b \tan \left(f x+e\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^m/(b*tan(f*x + e))^(3/2), x)
```

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

$$\int \frac{{\left(a\,\sin\left(e+f\,x\right)\right)}^m}{{\left(b\,\tan\left(e+f\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^m/(b*tan(e + f*x))^(3/2),x)
[Out] int((a*sin(e + f*x))^m/(b*tan(e + f*x))^(3/2), x)
```

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

$$\int \frac{\left(a \sin \left(e+f x\right)\right)^{m}}{\left(b \tan \left(e+f x\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Integral((a*sin(e + f*x))**m/(b*tan(e + f*x))**(3/2), x)
```

3.174 $\int (a\sin(e+fx))^m (b\tan(e+fx))^n\,dx$

Optimal. Leaf size=83

$$\frac{\cos^2(e+fx)^{\frac{n+1}{2}}(a\sin(e+fx))^m(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(m+n+1);\frac{1}{2}(m+n+3);\sin^2(e+fx)\right)}{bf(m+n+1)}$$

```
[Out] (cos(f*x+e)^2)^(1/2+1/2*n)*hypergeom([1/2+1/2*n, 1/2+1/2*m+1/2*n],[3/2+1/2*
m+1/2*n],sin(f*x+e)^2)*(a*sin(f*x+e))^m*(b*tan(f*x+e))^(1+n)/b/f/(1+m+n)
```

Rubi [A] time = 0.10, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2602, 2577}

$$\frac{\cos^2(e+fx)^{\frac{n+1}{2}}(a\sin(e+fx))^m(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(m+n+1);\frac{1}{2}(m+n+3);\sin^2(e+fx)\right)}{bf(m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((Cos[e + f*x]^2)^((1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (1 + m + n)/2, (
3 + m + n)/2, Sin[e + f*x]^2]*(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^(1 + n))/
(b*f*(1 + m + n))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int (a\sin(e+fx))^m(b\tan(e+fx))^n\,dx = \frac{\left(a\cos^{1+n}(e+fx)(a\sin(e+fx))^{-1-n}(b\tan(e+fx))^{1+n}\right)\int\cos^{-n}(e+fx}{b}$$
$$= \frac{\cos^2(e+fx)^{\frac{1+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{2}(1+m+n);\frac{1}{2}(3+m+n);\sin^2(e+fx)\right)(a}{bf(1+m+n)}$$

Mathematica [C] time = 1.96, size = 260, normalized size = 3.13

$$\frac{(m+n+3)\sin(e+fx)(a\,s}{f(m+n+1)\left((m+n+3)F_1\left(\frac{1}{2}(m+n+1);n,m+1;\frac{1}{2}(m+n+3);\tan^2\left(\frac{1}{2}(e+fx)\right),-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)-2\,\mathrm{ta}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a*Sin[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((3 + m + n)*AppellF1[(1 + m + n)/2, n, 1 + m, (3 + m + n)/2, Tan[(e + f*x)
/2]^2, -Tan[(e + f*x)/2]^2]*Sin[e + f*x]*(a*Sin[e + f*x])^m*(b*Tan[e + f*x]
)^n)/(f*(1 + m + n)*((3 + m + n)*AppellF1[(1 + m + n)/2, n, 1 + m, (3 + m +
 n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] - 2*((1 + m)*AppellF1[(3 +
m + n)/2, n, 2 + m, (5 + m + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]
 - n*AppellF1[(3 + m + n)/2, 1 + n, 1 + m, (5 + m + n)/2, Tan[(e + f*x)/2]^
2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2))
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(a\sin\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((a*sin(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

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

$$\int\left(a\sin\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

maple [F] time = 1.45, size = 0, normalized size = 0.00

$$\int \left(a \sin \left(f x+e\right)\right)^{m} \left(b \tan \left(f x+e\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^m*(b*tan(f*x+e))^n,x)
[Out] int((a*sin(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(a \sin \left(f x+e\right)\right)^{m} \left(b \tan \left(f x+e\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

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

$$\int {\left(a\,\sin\left(e+f\,x\right)\right)}^m\,{\left(b\,\tan\left(e+f\,x\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^m*(b*tan(e + f*x))^n,x)
[Out] int((a*sin(e + f*x))^m*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(a \sin{\left(e + f x \right)}\right)^{m} \left(b \tan{\left(e + f x \right)}\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**m*(b*tan(f*x+e))**n,x)
[Out] Integral((a*sin(e + f*x))**m*(b*tan(e + f*x))**n, x)
```

3.175 $\int \sin^4(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=50

$$\frac{(b\tan(e+fx))^{n+5}\,{}_2F_1\left(3,\frac{n+5}{2};\frac{n+7}{2};-\tan^2(e+fx)\right)}{b^5f(n+5)}$$

```
[Out] hypergeom([3, 5/2+1/2*n],[7/2+1/2*n],-tan(f*x+e)^2)*(b*tan(f*x+e))^(5+n)/b^
5/f/(5+n)
```

Rubi [A] time = 0.06, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2591, 364}

$$\frac{(b\tan(e+fx))^{n+5}\,{}_2F_1\left(3,\frac{n+5}{2};\frac{n+7}{2};-\tan^2(e+fx)\right)}{b^5f(n+5)}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[e + f*x]^4*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Hypergeometric2F1[3, (5 + n)/2, (7 + n)/2, -Tan[e + f*x]^2]*(b*Tan[e + f*x
])^(5 + n))/(b^5*f*(5 + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^4(e+fx)(b\tan(e+fx))^n\,dx = \frac{b\,\text{Subst}\left(\int \frac{x^{4+n}}{(b^2+x^2)^3}\,dx, x, b\tan(e+fx)\right)}{f}$$

$$= \frac{{}_2F_1\left(3,\frac{5+n}{2};\frac{7+n}{2};-\tan^2(e+fx)\right)(b\tan(e+fx))^{5+n}}{b^5f(5+n)}$$

Mathematica [C] time = 4.71, size = 916, normalized size = 18.32

$$\overline{f(n+1)\left((n+3)F_1\left(\frac{n+1}{2};n,3;\frac{n+3}{2};\tan^2\left(\frac{1}{2}(e+fx)\right),-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)(\cos(e+fx)+1)+(n+3)F_1\left(\frac{n+1}{2};n,5;\right.\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sin[e + f*x]^4*(b*Tan[e + f*x])^n,x]
```

```
[Out] (64*(3 + n)*(AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(e + f*x)/2]^2, -Tan[
(e + f*x)/2]^2] - 2*AppellF1[(1 + n)/2, n, 4, (3 + n)/2, Tan[(e + f*x)/2]^2
, -Tan[(e + f*x)/2]^2] + AppellF1[(1 + n)/2, n, 5, (3 + n)/2, Tan[(e + f*x)
/2]^2, -Tan[(e + f*x)/2]^2])*Cos[(e + f*x)/2]^7*Sin[(e + f*x)/2]^5*(b*Tan[e
 + f*x])^n)/(f*(1 + n)*((3 + n)*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(e
 + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(1 + Cos[e + f*x]) + (3 + n)*AppellF1[(1
 + n)/2, n, 5, (3 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(1 + Cos
[e + f*x]) + 2*(-5*AppellF1[(3 + n)/2, n, 6, (5 + n)/2, Tan[(e + f*x)/2]^2,
 -Tan[(e + f*x)/2]^2] + n*AppellF1[(3 + n)/2, 1 + n, 3, (5 + n)/2, Tan[(e +
 f*x)/2]^2, -Tan[(e + f*x)/2]^2] - 2*n*AppellF1[(3 + n)/2, 1 + n, 4, (5 + n
)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + n*AppellF1[(3 + n)/2, 1 + n
, 5, (5 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] - 6*AppellF1[(1 +
n)/2, n, 4, (3 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[(e + f*
x)/2]^2 - 2*n*AppellF1[(1 + n)/2, n, 4, (3 + n)/2, Tan[(e + f*x)/2]^2, -Tan
[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2 + 3*AppellF1[(3 + n)/2, n, 4, (5 + n)/2
, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(-1 + Cos[e + f*x]) - 8*AppellF1
[(3 + n)/2, n, 5, (5 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(-1 +
 Cos[e + f*x]) + 5*AppellF1[(3 + n)/2, n, 6, (5 + n)/2, Tan[(e + f*x)/2]^2,
 -Tan[(e + f*x)/2]^2]*Cos[e + f*x] - n*AppellF1[(3 + n)/2, 1 + n, 3, (5 + n
)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[e + f*x] + 2*n*AppellF1[(
3 + n)/2, 1 + n, 4, (5 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos
[e + f*x] - n*AppellF1[(3 + n)/2, 1 + n, 5, (5 + n)/2, Tan[(e + f*x)/2]^2,
-Tan[(e + f*x)/2]^2]*Cos[e + f*x])))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(\cos\left(fx+e\right)^{4}-2\,\cos\left(fx+e\right)^{2}+1\right)\left(b\tan\left(fx+e\right)\right)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^4*(b*tan(f*x+e))^n,x, algorithm="fricas")
[Out] integral((cos(f*x + e)^4 - 2*cos(f*x + e)^2 + 1)*(b*tan(f*x + e))^n, x)
```

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

$$\int\left(b\tan\left(fx+e\right)\right)^{n}\sin\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^4*(b*tan(f*x+e))^n,x, algorithm="giac")
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e)^4, x)
```

maple [F] time = 1.99, size = 0, normalized size = 0.00

$$\int\left(\sin^{4}\left(fx+e\right)\right)\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x+e)^4*(b*tan(f*x+e))^n,x)
[Out] int(sin(f*x+e)^4*(b*tan(f*x+e))^n,x)
```

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

$$\int\left(b\tan\left(fx+e\right)\right)^{n}\sin\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^4*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\sin\left(e+f\,x\right)^{4}\,\left(b\,\tan\left(e+f\,x\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(e + f*x)^4*(b*tan(e + f*x))^n,x)
```

```
[Out] int(sin(e + f*x)^4*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(b\tan\left(e+fx\right)\right)^{n}\sin^{4}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)**4*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral((b*tan(e + f*x))**n*sin(e + f*x)**4, x)
```

3.176 $\int \sin^2(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=50

$$\frac{(b\tan(e+fx))^{n+3}\,{}_2F_1\left(2,\frac{n+3}{2};\frac{n+5}{2};-\tan^2(e+fx)\right)}{b^3f(n+3)}$$

```
[Out] hypergeom([2, 3/2+1/2*n],[5/2+1/2*n],-tan(f*x+e)^2)*(b*tan(f*x+e))^(3+n)/b^
3/f/(3+n)
```

Rubi [A] time = 0.05, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2591, 364}

$$\frac{(b\tan(e+fx))^{n+3}\,{}_2F_1\left(2,\frac{n+3}{2};\frac{n+5}{2};-\tan^2(e+fx)\right)}{b^3f(n+3)}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[e + f*x]^2*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Hypergeometric2F1[2, (3 + n)/2, (5 + n)/2, -Tan[e + f*x]^2]*(b*Tan[e + f*x
])^(3 + n))/(b^3*f*(3 + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \sin^2(e+fx)(b\tan(e+fx))^n\,dx = \frac{b\,\mathrm{Subst}\left(\int \frac{x^{2+n}}{(b^2+x^2)^2}\,dx,x,b\tan(e+fx)\right)}{f}$$

$$= \frac{{}_2F_1\left(2,\frac{3+n}{2};\frac{5+n}{2};-\tan^2(e+fx)\right)(b\tan(e+fx))^{3+n}}{b^3f(3+n)}$$

Mathematica [C] time = 2.11, size = 450, normalized size = 9.00

$$\overline{f(n+1)\left(-2(n+3)\cos^2\left(\frac{1}{2}(e+fx)\right)F_1\left(\frac{n+1}{2};n,3;\frac{n+3}{2};\tan^2\left(\frac{1}{2}(e+fx)\right),-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)+2(\cos(e+fx)-1}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sin[e + f*x]^2*(b*Tan[e + f*x])^n,x]
```

```
[Out] (16*(3 + n)*(AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(e + f*x)/2]^2, -Tan[
(e + f*x)/2]^2] - AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(e + f*x)/2]^2,
-Tan[(e + f*x)/2]^2])*Cos[(e + f*x)/2]^5*Sin[(e + f*x)/2]^3*(b*Tan[e + f*x]
)^n)/(f*(1 + n)*(-2*(3 + n)*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(e + f
*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2 + 2*(2*AppellF1[(3 + n)/2
, n, 3, (5 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] - 3*AppellF1[(3
 + n)/2, n, 4, (5 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + n*(-Ap
pellF1[(3 + n)/2, 1 + n, 2, (5 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2
]^2] + AppellF1[(3 + n)/2, 1 + n, 3, (5 + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e
 + f*x)/2]^2]))*(-1 + Cos[e + f*x]) + (3 + n)*AppellF1[(1 + n)/2, n, 2, (3
+ n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(1 + Cos[e + f*x])))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\left(\cos\left(fx+e\right)^2-1\right)\left(b\tan\left(fx+e\right)\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^2*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral(-(cos(f*x + e)^2 - 1)*(b*tan(f*x + e))^n, x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n \sin\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^2*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e)^2, x)
```

maple [F] time = 1.71, size = 0, normalized size = 0.00

$$\int \left(\sin^2\left(fx+e\right)\right)\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x+e)^2*(b*tan(f*x+e))^n,x)
```

```
[Out] int(sin(f*x+e)^2*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\sin\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^2*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sin\left(e+f\,x\right)^2\,\left(b\tan\left(e+f\,x\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(e + f*x)^2*(b*tan(e + f*x))^n,x)
```

```
[Out] int(sin(e + f*x)^2*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(b\tan\left(e+fx\right)\right)^n\sin^2\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)**2*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral((b*tan(e + f*x))**n*sin(e + f*x)**2, x)
```

3.177 $\int \csc^2(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=25

$$-\frac{b(b\tan(e+fx))^{n-1}}{f(1-n)}$$

```
[Out] -b*(b*tan(f*x+e))^(-1+n)/f/(1-n)
```

Rubi [A] time = 0.04, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2591, 30}

$$-\frac{b(b\tan(e+fx))^{n-1}}{f(1-n)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[e + f*x]^2*(b*Tan[e + f*x])^n,x]
```

```
[Out] -((b*(b*Tan[e + f*x])^(-1 + n))/(f*(1 - n)))
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\begin{aligned}\int \csc^2(e+fx)(b\tan(e+fx))^n\,dx &= \frac{b\,\mathrm{Subst}\left(\int x^{-2+n}\,dx, x, b\tan(e+fx)\right)}{f}\\ &= -\frac{b(b\tan(e+fx))^{-1+n}}{f(1-n)}\end{aligned}$$

Mathematica [A] time = 0.07, size = 22, normalized size = 0.88

$$\frac{b(b\tan(e+fx))^{n-1}}{f(n-1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[e + f*x]^2*(b*Tan[e + f*x])^n,x]
```

```
[Out] (b*(b*Tan[e + f*x])^(-1 + n))/(f*(-1 + n))
```

fricas [A] time = 0.44, size = 42, normalized size = 1.68

$$\frac{\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{n}\cos\left(fx+e\right)}{\left(fn-f\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^2*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] (b*sin(f*x + e)/cos(f*x + e))^n*cos(f*x + e)/((f*n - f)*sin(f*x + e))
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^2*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e)^2, x)
```

maple [C] time = 3.66, size = 4284, normalized size = 171.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(f*x+e)^2*(b*tan(f*x+e))^n,x)
```

```
[Out] I/(-1+n)/f/(exp(2*I*(f*x+e))-1)*(1/((exp(I*(f*x+e))+I)^n)/((exp(I*(f*x+e))-
I)^n)*(exp(I*(f*x+e))+1)^n*(exp(I*(f*x+e))-1)^n*b^n*exp(-1/2*I*n*Pi*csgn(I/
(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(
exp(I*(f*x+e))+I))*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2*I*(f*
x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn(I*exp(I*(f*x+e))-I))*ex
p(1/2*I*n*Pi*csgn(1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e)
)-1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)^2)*exp(1/2*I*n*Pi*csgn(I/(exp(
I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(e
xp(I*(f*x+e))+I)*b)^2*csgn(I*b))*exp(-1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/
(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+
```

```
I)*b)^3)*exp(-1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2
*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^3)*exp(-1/2*I*n*Pi*csg
n(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-
I)/(exp(I*(f*x+e))+I))^3)*exp(-1/2*I*n*Pi*csgn(1/(exp(I*(f*x+e))-I)/(exp(I*
(f*x+e))+I)*b*exp(2*I*(f*x+e))-1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)^3
)*exp(-1/2*I*Pi*n)*exp(-1/2*I*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+
I))^3*n)*exp(1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(
2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)*csgn(1/(exp(I*(f*x+
e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-1/(exp(I*(f*x+e))-I)/(exp(I*(f
*x+e))+I)*b)^2)*exp(1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)
*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^2*csgn(I*exp(I*(f*
x+e))+I))*exp(1/2*I*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^2*csgn
(I/(exp(I*(f*x+e))+I))*n)*exp(-1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*
(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)*c
sgn(1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-1/(exp(I*(f*
x+e))-I)/(exp(I*(f*x+e))+I)*b))*exp(1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(e
xp(I*(f*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^
2*csgn(I*exp(I*(f*x+e))-I))*exp(1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I
*(f*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn
(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e
))-I)/(exp(I*(f*x+e))+I)*b)^2)*exp(1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(ex
p(I*(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csg
n(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e)
)-I)/(exp(I*(f*x+e))+I))^2)*exp(1/2*I*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I
*(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^2*csgn
(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)))*exp(-1/2*I*n*Pi*csgn(I/(exp(I*(f
*x+e))-I)/(exp(I*(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*
x+e))+I))*csgn(I*exp(I*(f*x+e))+I)*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e)
)+I)))*exp(1/2*I*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^2*csgn(I/
(exp(I*(f*x+e))-I))*n)*exp(-1/2*I*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+
e))+I))*csgn(I/(exp(I*(f*x+e))-I))*csgn(I/(exp(I*(f*x+e))+I))*n)*exp(-1/2*I
*n*Pi*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(
I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))
+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)*csgn(I*b)
)*exp(2*I*f*x)*exp(2*I*e)+1/((exp(I*(f*x+e))+I)^n)/((exp(I*(f*x+e))-I)^n)*(
exp(I*(f*x+e))+1)^n*(exp(I*(f*x+e))-1)^n*b^n*exp(-1/2*I*Pi*n*(-csgn(I/(exp(
I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^2*csgn(I/(exp(I*(f*x+e))-I))+csgn(I/(exp(
I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^3+csgn(1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e
))+I)*b*exp(2*I*(f*x+e))-1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)^3+csgn(
I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)
/(exp(I*(f*x+e))+I))*csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2*I*(
f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn(I*exp(I*(f*x+e))-I)-c
sgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(I*(f*x+
e))-I)/(exp(I*(f*x+e))+I))^2*csgn(I*exp(I*(f*x+e))-I)+csgn(I/(exp(I*(f*x+e)
)-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x
```

```
+e))+I)*b)^3-csgn(1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e)
)-1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)^2+csgn(I/(exp(I*(f*x+e))-I)/(e
xp(I*(f*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*
csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f
*x+e))-I)/(exp(I*(f*x+e))+I)*b)*csgn(I*b)-csgn(I/(exp(I*(f*x+e))-I)/(exp(I*
(f*x+e))+I))^2*csgn(I/(exp(I*(f*x+e))+I))-csgn(I/(exp(I*(f*x+e))-I)/(exp(I*
(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn(I/
(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)
/(exp(I*(f*x+e))+I))^2+csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(I*(
f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^3+csgn(I/(exp(I*(f*x+e))-I
)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e)
)+I)*b)*csgn(1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-1/(
exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)+csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f
*x+e))+I)*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^3+csgn(
I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn(I/(exp(I*(f*x+e))-I))*csgn(I/
(exp(I*(f*x+e))+I))+csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(I*(f*x
+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn(I*exp(I*(f*x+e))+I)*csgn
(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))-csgn(I/(exp(I*(f*x+e))-I)/(exp(I*
(f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^2*csgn(
I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))-csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(
f*x+e))+I)*exp(I*(f*x+e))+I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))^2*csgn(I
*exp(I*(f*x+e))+I)-csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*exp(2*I*(f*
x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I))*csgn(I/(exp(I*(f*x+e))-I)/(e
xp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)
*b)^2-csgn(I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(ex
p(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)^2*csgn(I*b)-csgn(I/(exp(I*(f*x+e))-I)
/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-I/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))
+I)*b)*csgn(1/(exp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b*exp(2*I*(f*x+e))-1/(e
xp(I*(f*x+e))-I)/(exp(I*(f*x+e))+I)*b)^2+1)))
```

maxima [A] time = 0.42, size = 28, normalized size = 1.12

$$\frac{b^n \tan\left(fx+e\right)^n}{f(n-1)\tan\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^2*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] b^n*tan(f*x + e)^n/(f*(n - 1)*tan(f*x + e))
```

mupad [B] time = 2.62, size = 53, normalized size = 2.12

$$-\frac{\sin \left(2\,e+2\,f\,x\right)\,{\left(\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{2\,{\cos\left(e+f\,x\right)}^2}\right)}^n}{2\,f\,\left({\cos\left(e+f\,x\right)}^2-1\right)\,\left(n-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n/sin(e + f*x)^2,x)
```

```
[Out] -(sin(2*e + 2*f*x)*((b*sin(2*e + 2*f*x))/(2*cos(e + f*x)^2))^n)/(2*f*(cos(e
 + f*x)^2 - 1)*(n - 1))
```

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

$$\int \left(b \tan \left(e+f x\right)\right)^{n} \csc ^{2}\left(e+f x\right) d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)**2*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral((b*tan(e + f*x))**n*csc(e + f*x)**2, x)
```

3.178 $\int \csc^4(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=53

$$-\frac{b^3(b\tan(e+fx))^{n-3}}{f(3-n)}-\frac{b(b\tan(e+fx))^{n-1}}{f(1-n)}$$

```
[Out] -b^3*(b*tan(f*x+e))^(-3+n)/f/(3-n)-b*(b*tan(f*x+e))^(-1+n)/f/(1-n)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2591, 14}

$$-\frac{b^3(b\tan(e+fx))^{n-3}}{f(3-n)}-\frac{b(b\tan(e+fx))^{n-1}}{f(1-n)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[e + f*x]^4*(b*Tan[e + f*x])^n,x]
```

```
[Out] -((b^3*(b*Tan[e + f*x])^(-3 + n))/(f*(3 - n))) - (b*(b*Tan[e + f*x])^(-1 +
n))/(f*(1 - n))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^4(e+fx)(b\tan(e+fx))^n\,dx = \frac{b\,\text{Subst}\left(\int x^{-4+n}\left(b^2+x^2\right)\,dx,x,b\tan(e+fx)\right)}{f}$$
$$= \frac{b\,\text{Subst}\left(\int \left(b^2x^{-4+n}+x^{-2+n}\right)\,dx,x,b\tan(e+fx)\right)}{f}$$
$$= -\frac{b^3(b\tan(e+fx))^{-3+n}}{f(3-n)} - \frac{b(b\tan(e+fx))^{-1+n}}{f(1-n)}$$

Mathematica [A] time = 0.16, size = 46, normalized size = 0.87

$$\frac{b\csc^2(e+fx)(\cos(2(e+fx))+n-2)(b\tan(e+fx))^{n-1}}{f(n-3)(n-1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[e + f*x]^4*(b*Tan[e + f*x])^n,x]
```

```
[Out] (b*(-2 + n + Cos[2*(e + f*x)])*Csc[e + f*x]^2*(b*Tan[e + f*x])^(-1 + n))/(f
*(-3 + n)*(-1 + n))
```

fricas [A] time = 0.46, size = 86, normalized size = 1.62

$$\frac{\left(2\,\cos\left(fx+e\right)^3+(n-3)\cos\left(fx+e\right)\right)\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^n}{\left(fn^2-\left(fn^2-4\,fn+3\,f\right)\cos\left(fx+e\right)^2-4\,fn+3\,f\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^4*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] (2*cos(f*x + e)^3 + (n - 3)*cos(f*x + e))*(b*sin(f*x + e)/cos(f*x + e))^n/(
(f*n^2 - (f*n^2 - 4*f*n + 3*f)*cos(f*x + e)^2 - 4*f*n + 3*f)*sin(f*x + e))
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\csc\left(fx+e\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^4*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e)^4, x)
```

maple [C] time = 1.48, size = 13019, normalized size = 245.64

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(f*x+e)^4*(b*tan(f*x+e))^n,x)
```

```
[Out] result too large to display
```

maxima [A] time = 0.67, size = 55, normalized size = 1.04

$$\frac{\frac{b^n \tan\left(fx+e\right)^n}{(n-1)\tan\left(fx+e\right)} + \frac{b^n \tan\left(fx+e\right)^n}{(n-3)\tan\left(fx+e\right)^3}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^4*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] (b^n*tan(f*x + e)^n/((n - 1)*tan(f*x + e)) + b^n*tan(f*x + e)^n/((n - 3)*ta
n(f*x + e)^3))/f
```

mupad [B] time = 3.74, size = 138, normalized size = 2.60

$$-\frac{2\left(-\frac{b\sin\left(2e+2fx\right)}{2\sin\left(e+fx\right)^2-2}\right)^n \left(9\sin\left(2e+2fx\right)-6\sin\left(4e+4fx\right)+\sin\left(6e+6fx\right)-4n\sin\left(2e+2fx\right)+2n\sin\right.}{f\left(30\sin\left(e+fx\right)^2-12\sin\left(2e+2fx\right)^2+2\sin\left(3e+3fx\right)^2\right)\left(n^2-4n+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n/sin(e + f*x)^4,x)
```

```
[Out] -(2*(-(b*sin(2*e + 2*f*x))/(2*sin(e + f*x)^2 - 2))^n*(9*sin(2*e + 2*f*x) -
6*sin(4*e + 4*f*x) + sin(6*e + 6*f*x) - 4*n*sin(2*e + 2*f*x) + 2*n*sin(4*e
+ 4*f*x)))/(f*(2*sin(3*e + 3*f*x)^2 - 12*sin(2*e + 2*f*x)^2 + 30*sin(e + f*
x)^2)*(n^2 - 4*n + 3))
```

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

$$\int \left(b\tan\left(e+fx\right)\right)^n \csc^4\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)**4*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral((b*tan(e + f*x))**n*csc(e + f*x)**4, x)
```

3.179 $\int \csc^6(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=80

$$-\frac{b^5(b\tan(e+fx))^{n-5}}{f(5-n)}-\frac{2b^3(b\tan(e+fx))^{n-3}}{f(3-n)}-\frac{b(b\tan(e+fx))^{n-1}}{f(1-n)}$$

```
[Out] -b^5*(b*tan(f*x+e))^(-5+n)/f/(5-n)-2*b^3*(b*tan(f*x+e))^(-3+n)/f/(3-n)-b*(b
*tan(f*x+e))^(-1+n)/f/(1-n)
```

Rubi [A] time = 0.06, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2591, 270}

$$-\frac{b^5(b\tan(e+fx))^{n-5}}{f(5-n)}-\frac{2b^3(b\tan(e+fx))^{n-3}}{f(3-n)}-\frac{b(b\tan(e+fx))^{n-1}}{f(1-n)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[e + f*x]^6*(b*Tan[e + f*x])^n,x]
```

```
[Out] -((b^5*(b*Tan[e + f*x])^(-5 + n))/(f*(5 - n))) - (2*b^3*(b*Tan[e + f*x])^(-
3 + n))/(f*(3 - n)) - (b*(b*Tan[e + f*x])^(-1 + n))/(f*(1 - n))
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2591

```
Int[sin[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> With[{ff = FreeFactors[Tan[e + f*x], x]}, Dist[(b*ff)/f, Subst[In
t[(ff*x)^(m + n)/(b^2 + ff^2*x^2)^(m/2 + 1), x], x, (b*Tan[e + f*x])/ff], x
]] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2]
```

Rubi steps

$$\int \csc^6(e+fx)(b\tan(e+fx))^n\,dx = \frac{b\,\text{Subst}\left(\int x^{-6+n}\left(b^2+x^2\right)^2\,dx,x,b\tan(e+fx)\right)}{f}$$
$$= \frac{b\,\text{Subst}\left(\int \left(b^4x^{-6+n}+2b^2x^{-4+n}+x^{-2+n}\right)dx,x,b\tan(e+fx)\right)}{f}$$
$$= -\frac{b^5(b\tan(e+fx))^{-5+n}}{f(5-n)}-\frac{2b^3(b\tan(e+fx))^{-3+n}}{f(3-n)}-\frac{b(b\tan(e+fx))^{-1+n}}{f(1-n)}$$

Mathematica [A] time = 0.26, size = 69, normalized size = 0.86

$$\frac{b\csc^4(e+fx)\left(2(n-3)\cos(2(e+fx))+\cos(4(e+fx))+n^2-6n+8\right)(b\tan(e+fx))^{n-1}}{f(n-5)(n-3)(n-1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[e + f*x]^6*(b*Tan[e + f*x])^n,x]
```

```
[Out] (b*(8 - 6*n + n^2 + 2*(-3 + n)*Cos[2*(e + f*x)] + Cos[4*(e + f*x)])*Csc[e +
 f*x]^4*(b*Tan[e + f*x])^(-1 + n))/(f*(-5 + n)*(-3 + n)*(-1 + n))
```

fricas [A] time = 0.46, size = 144, normalized size = 1.80

$$\frac{\left(8\cos\left(fx+e\right)^5+4(n-5)\cos\left(fx+e\right)^3+\left(n^2-8n+15\right)\cos\left(fx+e\right)\right)\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^n}{\left(\left(fn^3-9fn^2+23fn-15f\right)\cos\left(fx+e\right)^4+fn^3-9fn^2-2\left(fn^3-9fn^2+23fn-15f\right)\cos\left(fx+e\right)^2+23\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^6*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] (8*cos(f*x + e)^5 + 4*(n - 5)*cos(f*x + e)^3 + (n^2 - 8*n + 15)*cos(f*x + e
))*(b*sin(f*x + e)/cos(f*x + e))^n/(((f*n^3 - 9*f*n^2 + 23*f*n - 15*f)*cos(
f*x + e)^4 + f*n^3 - 9*f*n^2 - 2*(f*n^3 - 9*f*n^2 + 23*f*n - 15*f)*cos(f*x
+ e)^2 + 23*f*n - 15*f)*sin(f*x + e))
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\csc\left(fx+e\right)^6\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^6*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e)^6, x)
```

maple [C] time = 2.01, size = 26124, normalized size = 326.55

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(f*x+e)^6*(b*tan(f*x+e))^n,x)
```

```
[Out] result too large to display
```

maxima [A] time = 0.59, size = 81, normalized size = 1.01

$$\frac{\frac{b^n \tan\left(fx+e\right)^n}{(n-1)\tan\left(fx+e\right)} + \frac{2\,b^n \tan\left(fx+e\right)^n}{(n-3)\tan\left(fx+e\right)^3} + \frac{b^n \tan\left(fx+e\right)^n}{(n-5)\tan\left(fx+e\right)^5}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^6*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] (b^n*tan(f*x + e)^n/((n - 1)*tan(f*x + e)) + 2*b^n*tan(f*x + e)^n/((n - 3)*
tan(f*x + e)^3) + b^n*tan(f*x + e)^n/((n - 5)*tan(f*x + e)^5))/f
```

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

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^n}{\sin\left(e+f\,x\right)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n/sin(e + f*x)^6,x)
```

```
[Out] int((b*tan(e + f*x))^n/sin(e + f*x)^6, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)**6*(b*tan(f*x+e))**n,x)
```

```
[Out] Timed out
```

3.180 $\int \sin^3(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=78

$$\frac{\sin^3(e+fx)\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+4}{2};\frac{n+6}{2};\sin^2(e+fx)\right)}{bf(n+4)}$$

```
[Out] (cos(f*x+e)^2)^(1/2+1/2*n)*hypergeom([2+1/2*n, 1/2+1/2*n],[3+1/2*n],sin(f*x
+e)^2)*sin(f*x+e)^3*(b*tan(f*x+e))^(1+n)/b/f/(4+n)
```

Rubi [A] time = 0.08, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2602, 2577}

$$\frac{\sin^3(e+fx)\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+4}{2};\frac{n+6}{2};\sin^2(e+fx)\right)}{bf(n+4)}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[e + f*x]^3*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((Cos[e + f*x]^2)^((1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (4 + n)/2, (6 +
n)/2, Sin[e + f*x]^2]*Sin[e + f*x]^3*(b*Tan[e + f*x])^(1 + n))/(b*f*(4 + n)
)
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \sin^3(e+fx)(b\tan(e+fx))^n\,dx = \frac{\left(\cos^{1+n}(e+fx)\sin^{-1-n}(e+fx)(b\tan(e+fx))^{1+n}\right)\int \cos^{-n}(e+fx)\sin^{3+n}(e}{b}$$

$$= \frac{\cos^2(e+fx)^{\frac{1+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{4+n}{2};\frac{6+n}{2};\sin^2(e+fx)\right)\sin^3(e+fx)(b\tan(e+fx)}{bf(4+n)}$$

Mathematica [C] time = 2.83, size = 456, normalized size = 5.85

$$\overline{f(n+2)\left(-2(n+4)\cos^2\left(\frac{1}{2}(e+fx)\right)F_1\left(\frac{n}{2}+1;n,4;\frac{n}{2}+2;\tan^2\left(\frac{1}{2}(e+fx)\right),-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)+2(\cos(e+fx)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sin[e + f*x]^3*(b*Tan[e + f*x])^n,x]
```

```
[Out] (4*(4 + n)*(AppellF1[1 + n/2, n, 3, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e +
f*x)/2]^2] - AppellF1[1 + n/2, n, 4, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e +
 f*x)/2]^2])*Cos[(e + f*x)/2]^3*Sin[(e + f*x)/2]*Sin[e + f*x]^3*(b*Tan[e +
f*x])^n)/(f*(2 + n)*(-2*(4 + n)*AppellF1[1 + n/2, n, 4, 2 + n/2, Tan[(e + f
*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2 + 2*(3*AppellF1[2 + n/2,
n, 4, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] - 4*AppellF1[2 + n/
2, n, 5, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + n*(-AppellF1[2
 + n/2, 1 + n, 3, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + Appel
lF1[2 + n/2, 1 + n, 4, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]))*
(-1 + Cos[e + f*x]) + (4 + n)*AppellF1[1 + n/2, n, 3, 2 + n/2, Tan[(e + f*x
)/2]^2, -Tan[(e + f*x)/2]^2]*(1 + Cos[e + f*x])))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(\cos\left(fx+e\right)^2-1\right)\left(b\tan\left(fx+e\right)\right)^n\sin\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^3*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral(-(cos(f*x + e)^2 - 1)*(b*tan(f*x + e))^n*sin(f*x + e), x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\sin\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^3*(b*tan(f*x+e))^n,x, algorithm="giac")
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e)^3, x)
```

maple [F] time = 1.71, size = 0, normalized size = 0.00

$$\int \left(\sin^3\left(fx+e\right)\right)\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x+e)^3*(b*tan(f*x+e))^n,x)
[Out] int(sin(f*x+e)^3*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\sin\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)^3*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e)^3, x)
```

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

$$\int \sin\left(e+f\,x\right)^3\,\left(b\tan\left(e+f\,x\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(e + f*x)^3*(b*tan(e + f*x))^n,x)
[Out] int(sin(e + f*x)^3*(b*tan(e + f*x))^n, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)**3*(b*tan(f*x+e))**n,x)
[Out] Timed out
```

3.181 $\int \sin(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=76

$$\frac{\sin(e+fx)\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+2}{2};\frac{n+4}{2};\sin^2(e+fx)\right)}{bf(n+2)}$$

```
[Out] (cos(f*x+e)^2)^(1/2+1/2*n)*hypergeom([1+1/2*n, 1/2+1/2*n],[2+1/2*n],sin(f*x
+e)^2)*sin(f*x+e)*(b*tan(f*x+e))^(1+n)/b/f/(2+n)
```

Rubi [A] time = 0.07, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = {2602, 2577}

$$\frac{\sin(e+fx)\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+2}{2};\frac{n+4}{2};\sin^2(e+fx)\right)}{bf(n+2)}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[e + f*x]*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((Cos[e + f*x]^2)^((1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (2 + n)/2, (4 +
n)/2, Sin[e + f*x]^2]*Sin[e + f*x]*(b*Tan[e + f*x])^(1 + n))/(b*f*(2 + n))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \sin(e+fx)(b\tan(e+fx))^n\,dx = \frac{\left(\cos^{1+n}(e+fx)\sin^{-1-n}(e+fx)(b\tan(e+fx))^{1+n}\right)\int \cos^{-n}(e+fx)\sin^{1+n}(}{b}$$
$$= \frac{\cos^2(e+fx)^{\frac{1+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{2+n}{2};\frac{4+n}{2};\sin^2(e+fx)\right)\sin(e+fx)(b\tan(e+fx))}{bf(2+n)}$$

Mathematica [C] time = 1.09, size = 252, normalized size = 3.32

$$\frac{8(n+4)\sin^2\left(\frac{1}{2}(e+fx)\right)\cos^4\left(\frac{1}{2}(e+fx)\right)F_1\left(\frac{n}{2}\right.}{f(n+2)\left(2(\cos(e+fx)-1)\left(2F_1\left(\frac{n}{2}+2;n,3;\frac{n}{2}+3;\tan^2\left(\frac{1}{2}(e+fx)\right),-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)-nF_1\left(\frac{n}{2}+2;n+1,\right.\right.\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sin[e + f*x]*(b*Tan[e + f*x])^n,x]
```

```
[Out] (8*(4 + n)*AppellF1[1 + n/2, n, 2, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f
*x)/2]^2]*Cos[(e + f*x)/2]^4*Sin[(e + f*x)/2]^2*(b*Tan[e + f*x])^n)/(f*(2 +
 n)*(2*(2*AppellF1[2 + n/2, n, 3, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*
x)/2]^2] - n*AppellF1[2 + n/2, 1 + n, 2, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[
(e + f*x)/2]^2])*(-1 + Cos[e + f*x]) + (4 + n)*AppellF1[1 + n/2, n, 2, 2 +
n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(1 + Cos[e + f*x])))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(fx+e\right)\right)^n\sin\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((b*tan(f*x + e))^n*sin(f*x + e), x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\sin\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e), x)
```

maple [F] time = 1.26, size = 0, normalized size = 0.00

$$\int \sin\left(fx+e\right)\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x+e)*(b*tan(f*x+e))^n,x)
[Out] int(sin(f*x+e)*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^{n}\sin\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^n*sin(f*x + e), x)
```

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

$$\int \sin\left(e+f\,x\right)\,\left(b\tan\left(e+f\,x\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(e + f*x)*(b*tan(e + f*x))^n,x)
[Out] int(sin(e + f*x)*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(b\tan\left(e+fx\right)\right)^{n}\sin\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x+e)*(b*tan(f*x+e))**n,x)
[Out] Integral((b*tan(e + f*x))**n*sin(e + f*x), x)
```

3.182 $\int \csc(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=78

$$-\frac{\cos(e+fx)\sin^2(e+fx)^{-n/2}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{1-n}{2},\frac{2-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)}{f(1-n)}$$

```
[Out] -cos(f*x+e)*hypergeom([1-1/2*n, 1/2-1/2*n],[3/2-1/2*n],cos(f*x+e)^2)*(b*tan
(f*x+e))^n/f/(1-n)/((sin(f*x+e)^2)^(1/2*n))
```

Rubi [A] time = 0.08, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {2601, 2576}

$$-\frac{\cos(e+fx)\sin^2(e+fx)^{-n/2}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{1-n}{2},\frac{2-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)}{f(1-n)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[e + f*x]*(b*Tan[e + f*x])^n,x]
```

```
[Out] -((Cos[e + f*x]*Hypergeometric2F1[(1 - n)/2, (2 - n)/2, (3 - n)/2, Cos[e +
f*x]^2]*(b*Tan[e + f*x])^n)/(f*(1 - n)*(Sin[e + f*x]^2)^(n/2)))
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \csc(e+fx)(b\tan(e+fx))^n\,dx = \left(\cos^n(e+fx)\sin^{-n}(e+fx)(b\tan(e+fx))^n\right)\int \cos^{-n}(e+fx)\sin^{-1+n}(e+fx$$

$$= -\frac{\cos(e+fx)\,{}_2F_1\left(\frac{1-n}{2},\frac{2-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)\sin^2(e+fx)^{-n/2}(b\tan(e+fx)}{f(1-n)}$$

Mathematica [A] time = 0.21, size = 64, normalized size = 0.82

$$\frac{(b\tan(e+fx))^n\,{}_2F_1\left(\frac{n}{2},n;\frac{n}{2}+1;\tan^2\left(\frac{1}{2}(e+fx)\right)\right)\left(\cos(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)\right)^n}{fn}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Csc[e + f*x]*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Hypergeometric2F1[n/2, n, 1 + n/2, Tan[(e + f*x)/2]^2]*(Cos[e + f*x]*Sec[(
e + f*x)/2]^2)^n*(b*Tan[e + f*x])^n)/(f*n)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(b\tan\left(fx+e\right)\right)^n\csc\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((b*tan(f*x + e))^n*csc(f*x + e), x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\csc\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e), x)
```

maple [F] time = 0.70, size = 0, normalized size = 0.00

$$\int \csc\left(fx+e\right)\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(f*x+e)*(b*tan(f*x+e))^n,x)
```

```
[Out] int(csc(f*x+e)*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e), x)
```

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

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{n}}{\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n/sin(e + f*x),x)
```

```
[Out] int((b*tan(e + f*x))^n/sin(e + f*x), x)
```

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

$$\int \left(b\tan\left(e+fx\right)\right)^{n}\csc\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral((b*tan(e + f*x))**n*csc(e + f*x), x)
```

3.183 $\int \csc^3(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=78

$$-\frac{\cos(e+fx)\sin^2(e+fx)^{-n/2}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{1-n}{2},\frac{4-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)}{f(1-n)}$$

```
[Out] -cos(f*x+e)*hypergeom([2-1/2*n, 1/2-1/2*n],[3/2-1/2*n],cos(f*x+e)^2)*(b*tan
(f*x+e))^n/f/(1-n)/((sin(f*x+e)^2)^(1/2*n))
```

Rubi [A] time = 0.08, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2601, 2576}

$$-\frac{\cos(e+fx)\sin^2(e+fx)^{-n/2}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{1-n}{2},\frac{4-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)}{f(1-n)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[e + f*x]^3*(b*Tan[e + f*x])^n,x]
```

```
[Out] -((Cos[e + f*x]*Hypergeometric2F1[(1 - n)/2, (4 - n)/2, (3 - n)/2, Cos[e +
f*x]^2]*(b*Tan[e + f*x])^n)/(f*(1 - n)*(Sin[e + f*x]^2)^(n/2)))
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \csc^3(e+fx)(b\tan(e+fx))^n\,dx = \left(\cos^n(e+fx)\sin^{-n}(e+fx)(b\tan(e+fx))^n\right)\int \cos^{-n}(e+fx)\sin^{-3+n}(e+$$

$$= -\frac{\cos(e+fx)\,{}_2F_1\left(\frac{1-n}{2},\frac{4-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)\sin^2(e+fx)^{-n/2}(b\tan(e+f}{f(1-n)}$$

Mathematica [C] time = 15.52, size = 1242, normalized size = 15.92

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[Csc[e + f*x]^3*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Cot[(e + f*x)/2]^2*Hypergeometric2F1[-1 + n/2, n, n/2, Tan[(e + f*x)/2]^2]
*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*(b*Tan[e + f*x])^n)/(f*(-8 + 4*n)) + (
(4 + n)*AppellF1[1 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)
/2]^2]*Sin[e + f*x]^2*(b*Tan[e + f*x])^n)/(4*f*(2 + n)*(2*(AppellF1[2 + n/2
, n, 2, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] - n*AppellF1[2 +
n/2, 1 + n, 1, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*(-1 + Cos
[e + f*x]) + (4 + n)*AppellF1[1 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2]*(1 + Cos[e + f*x]))) + (Hypergeometric2F1[1 + n/2, n, 2
 + n/2, Tan[(e + f*x)/2]^2]*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*Tan[(e + f*
x)/2]^2*(b*Tan[e + f*x])^n)/(f*(8 + 4*n)) + (Cot[(e + f*x)/2]*(Cos[e + f*x]
*Sec[(e + f*x)/2]^2)^n*((2 + n)*Hypergeometric2F1[n/2, n, 1 + n/2, Tan[(e +
 f*x)/2]^2] - n*AppellF1[1 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(
e + f*x)/2]^2]*Tan[(e + f*x)/2]^2)*Tan[e + f*x]^n*(b*Tan[e + f*x])^n)/(8*f*
n*(2 + n)*(((Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*Sec[e + f*x]^2*((2 + n)*Hyp
ergeometric2F1[n/2, n, 1 + n/2, Tan[(e + f*x)/2]^2] - n*AppellF1[1 + n/2, n
, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Tan[(e + f*x)/2]^2)*
Tan[e + f*x]^(-1 + n))/(2*(2 + n)) + ((Cos[e + f*x]*Sec[(e + f*x)/2]^2)^(-1
 + n)*(-(Sec[(e + f*x)/2]^2*Sin[e + f*x]) + Cos[e + f*x]*Sec[(e + f*x)/2]^2
*Tan[(e + f*x)/2])*((2 + n)*Hypergeometric2F1[n/2, n, 1 + n/2, Tan[(e + f*x
)/2]^2] - n*AppellF1[1 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e +
f*x)/2]^2]*Tan[(e + f*x)/2]^2)*Tan[e + f*x]^n)/(2*(2 + n)) + ((Cos[e + f*x]
*Sec[(e + f*x)/2]^2)^n*(-(n*AppellF1[1 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/
2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2]) - n*Tan[(e
+ f*x)/2]^2*(-(((1 + n/2)*AppellF1[2 + n/2, n, 2, 3 + n/2, Tan[(e + f*x)/2]
^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/(2 + n/2)) +
((1 + n/2)*n*AppellF1[2 + n/2, 1 + n, 1, 3 + n/2, Tan[(e + f*x)/2]^2, -Tan[
(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/(2 + n/2)) + (n*(2 + n
)*Csc[(e + f*x)/2]*Sec[(e + f*x)/2]*(-Hypergeometric2F1[n/2, n, 1 + n/2, Ta
```

```
n[(e + f*x)/2]^2] + (1 - Tan[(e + f*x)/2]^2)^(-n)))/2)*Tan[e + f*x]^n)/(2*n
*(2 + n))))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)^{3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^3*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((b*tan(f*x + e))^n*csc(f*x + e)^3, x)
```

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

$$\int\left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^3*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e)^3, x)
```

maple [F] time = 0.79, size = 0, normalized size = 0.00

$$\int\left(\csc^{3}\left(fx+e\right)\right)\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(f*x+e)^3*(b*tan(f*x+e))^n,x)
```

```
[Out] int(csc(f*x+e)^3*(b*tan(f*x+e))^n,x)
```

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

$$\int\left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^3*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e)^3, x)
```

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

$$\int\frac{\left(b\tan\left(e+f\,x\right)\right)^{n}}{\sin\left(e+f\,x\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n/sin(e + f*x)^3,x)
```

```
[Out] int((b*tan(e + f*x))^n/sin(e + f*x)^3, x)
```

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

$$\int \left(b\tan \left(e+fx\right)\right)^{n} \csc^{3}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)**3*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral((b*tan(e + f*x))**n*csc(e + f*x)**3, x)
```

3.184 $\int \csc^5(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=78

$$-\frac{\cos(e+fx)\sin^2(e+fx)^{-n/2}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{1-n}{2},\frac{6-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)}{f(1-n)}$$

```
[Out] -cos(f*x+e)*hypergeom([3-1/2*n, 1/2-1/2*n],[3/2-1/2*n],cos(f*x+e)^2)*(b*tan
(f*x+e))^n/f/(1-n)/((sin(f*x+e)^2)^(1/2*n))
```

Rubi [A] time = 0.08, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2601, 2576}

$$-\frac{\cos(e+fx)\sin^2(e+fx)^{-n/2}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{1-n}{2},\frac{6-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)}{f(1-n)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[e + f*x]^5*(b*Tan[e + f*x])^n,x]
```

```
[Out] -((Cos[e + f*x]*Hypergeometric2F1[(1 - n)/2, (6 - n)/2, (3 - n)/2, Cos[e +
f*x]^2]*(b*Tan[e + f*x])^n)/(f*(1 - n)*(Sin[e + f*x]^2)^(n/2)))
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2601

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(Cos[e + f*x]^n*(b*Tan[e + f*x])^n)/(a*Sin[e + f*x])
^n, Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] &&  !IntegerQ[n] && (ILtQ[m, 0] || (EqQ[m, 1] && EqQ[n, -2^(-1
)]) || IntegersQ[m - 1/2, n - 1/2])
```

Rubi steps

$$\int \csc^5(e+fx)(b\tan(e+fx))^n\,dx = \left(\cos^n(e+fx)\sin^{-n}(e+fx)(b\tan(e+fx))^n\right)\int \cos^{-n}(e+fx)\sin^{-5+n}(e+$$

$$= -\frac{\cos(e+fx)\,{}_2F_1\left(\frac{1-n}{2},\frac{6-n}{2};\frac{3-n}{2};\cos^2(e+fx)\right)\sin^2(e+fx)^{-n/2}(b\tan(e+f}{f(1-n)}$$

Mathematica [C] time = 17.75, size = 1516, normalized size = 19.44

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[Csc[e + f*x]^5*(b*Tan[e + f*x])^n,x]
```

```
[Out] (3*Cot[(e + f*x)/2]^2*Hypergeometric2F1[-1 + n/2, n, n/2, Tan[(e + f*x)/2]^
2]*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*(b*Tan[e + f*x])^n)/(16*f*(-2 + n))
+ (Cot[(e + f*x)/2]^2*((-2 + n)*Cot[(e + f*x)/2]^2*Hypergeometric2F1[-2 + n
/2, n, -1 + n/2, Tan[(e + f*x)/2]^2] + (-4 + n)*Hypergeometric2F1[-1 + n/2,
 n, n/2, Tan[(e + f*x)/2]^2])*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*(b*Tan[e
+ f*x])^n)/(16*f*(-4 + n)*(-2 + n)) + (3*(4 + n)*AppellF1[1 + n/2, n, 1, 2
+ n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sin[e + f*x]^2*(b*Tan[e + f
*x])^n)/(16*f*(2 + n)*(2*(AppellF1[2 + n/2, n, 2, 3 + n/2, Tan[(e + f*x)/2]
^2, -Tan[(e + f*x)/2]^2] - n*AppellF1[2 + n/2, 1 + n, 1, 3 + n/2, Tan[(e +
f*x)/2]^2, -Tan[(e + f*x)/2]^2])*(-1 + Cos[e + f*x]) + (4 + n)*AppellF1[1 +
 n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(1 + Cos[e +
f*x]))) + (3*Hypergeometric2F1[1 + n/2, n, 2 + n/2, Tan[(e + f*x)/2]^2]*(Co
s[e + f*x]*Sec[(e + f*x)/2]^2)^n*Tan[(e + f*x)/2]^2*(b*Tan[e + f*x])^n)/(16
*f*(2 + n)) + ((Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*Tan[(e + f*x)/2]^2*((4 +
 n)*Hypergeometric2F1[1 + n/2, n, 2 + n/2, Tan[(e + f*x)/2]^2] + (2 + n)*Hy
pergeometric2F1[2 + n/2, n, 3 + n/2, Tan[(e + f*x)/2]^2]*Tan[(e + f*x)/2]^2
)*(b*Tan[e + f*x])^n)/(16*f*(2 + n)*(4 + n)) + (9*Cot[(e + f*x)/2]*(Cos[e +
 f*x]*Sec[(e + f*x)/2]^2)^n*((2 + n)*Hypergeometric2F1[n/2, n, 1 + n/2, Tan
[(e + f*x)/2]^2] - n*AppellF1[1 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2]*Tan[(e + f*x)/2]^2)*Tan[e + f*x]^n*(b*Tan[e + f*x])^n)/
(128*f*n*(2 + n)*((3*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*Sec[e + f*x]^2*((2
 + n)*Hypergeometric2F1[n/2, n, 1 + n/2, Tan[(e + f*x)/2]^2] - n*AppellF1[1
 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Tan[(e + f*
x)/2]^2)*Tan[e + f*x]^(-1 + n))/(8*(2 + n)) + (3*(Cos[e + f*x]*Sec[(e + f*x
)/2]^2)^(-1 + n)*(-(Sec[(e + f*x)/2]^2*Sin[e + f*x]) + Cos[e + f*x]*Sec[(e
+ f*x)/2]^2*Tan[(e + f*x)/2])*((2 + n)*Hypergeometric2F1[n/2, n, 1 + n/2, T
an[(e + f*x)/2]^2] - n*AppellF1[1 + n/2, n, 1, 2 + n/2, Tan[(e + f*x)/2]^2,
 -Tan[(e + f*x)/2]^2]*Tan[(e + f*x)/2]^2)*Tan[e + f*x]^n)/(8*(2 + n)) + (3*
(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^n*(-(n*AppellF1[1 + n/2, n, 1, 2 + n/2, T
```

```
an[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2]
) - n*Tan[(e + f*x)/2]^2*(-(((1 + n/2)*AppellF1[2 + n/2, n, 2, 3 + n/2, Tan
[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/
(2 + n/2)) + ((1 + n/2)*n*AppellF1[2 + n/2, 1 + n, 1, 3 + n/2, Tan[(e + f*x
)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/(2 + n/2)
) + (n*(2 + n)*Csc[(e + f*x)/2]*Sec[(e + f*x)/2]*(-Hypergeometric2F1[n/2, n
, 1 + n/2, Tan[(e + f*x)/2]^2] + (1 - Tan[(e + f*x)/2]^2)^(-n)))/2)*Tan[e +
 f*x]^n)/(8*n*(2 + n))))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)^{5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^5*(b*tan(f*x+e))^n,x, algorithm="fricas")
[Out] integral((b*tan(f*x + e))^n*csc(f*x + e)^5, x)
```

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

$$\int\left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^5*(b*tan(f*x+e))^n,x, algorithm="giac")
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e)^5, x)
```

maple [F] time = 0.81, size = 0, normalized size = 0.00

$$\int\left(\csc^{5}\left(fx+e\right)\right)\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(f*x+e)^5*(b*tan(f*x+e))^n,x)
[Out] int(csc(f*x+e)^5*(b*tan(f*x+e))^n,x)
```

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

$$\int\left(b\tan\left(fx+e\right)\right)^{n}\csc\left(fx+e\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)^5*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^n*csc(f*x + e)^5, x)
```

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

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^n}{\sin\left(e+f\,x\right)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n/sin(e + f*x)^5,x)
[Out] int((b*tan(e + f*x))^n/sin(e + f*x)^5, x)
```

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

$$\int \left(b\tan\left(e+fx\right)\right)^n\csc^5\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(f*x+e)**5*(b*tan(f*x+e))**n,x)
[Out] Integral((b*tan(e + f*x))**n*csc(e + f*x)**5, x)
```

3.185 $\int (a\sin(e+fx))^{3/2}(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=89

$$\frac{2(a\sin(e+fx))^{3/2}\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n+5);\frac{1}{4}(2n+9);\sin^2(e+fx)\right)}{bf(2n+5)}$$

```
[Out] 2*(cos(f*x+e)^2)^(1/2+1/2*n)*hypergeom([1/2+1/2*n, 5/4+1/2*n],[9/4+1/2*n],s
in(f*x+e)^2)*(a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^(1+n)/b/f/(5+2*n)
```

Rubi [A] time = 0.12, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$\frac{2(a\sin(e+fx))^{3/2}\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n+5);\frac{1}{4}(2n+9);\sin^2(e+fx)\right)}{bf(2n+5)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sin[e + f*x])^(3/2)*(b*Tan[e + f*x])^n,x]
```

```
[Out] (2*(Cos[e + f*x]^2)^((1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (5 + 2*n)/4, (
9 + 2*n)/4, Sin[e + f*x]^2]*(a*Sin[e + f*x])^(3/2)*(b*Tan[e + f*x])^(1 + n)
)/(b*f*(5 + 2*n))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int (a\sin(e+fx))^{3/2}(b\tan(e+fx))^n\,dx = \frac{\left(a\cos^{1+n}(e+fx)(a\sin(e+fx))^{-1-n}(b\tan(e+fx))^{1+n}\right)\int \cos^{-n}(e+f}{b}$$
$$= \frac{2\cos^2(e+fx)^{\frac{1+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{4}(5+2n);\frac{1}{4}(9+2n);\sin^2(e+fx)\right)(a\sin(}{bf(5+2n)}$$

Mathematica [C] time = 2.56, size = 297, normalized size = 3.34

$$\frac{8(2n+9)\sin\left(\frac{1}{2}(e+fx)\right)\cos^3\left(\frac{1}{2}(e+fx)\right)(a\sin(e+}{f(2n+5)\left(2(2n+9)\cos^2\left(\frac{1}{2}(e+fx)\right)F_1\left(\frac{n}{2}+\frac{5}{4};n,\frac{5}{2};\frac{n}{2}+\frac{9}{4};\tan^2\left(\frac{1}{2}(e+fx)\right),-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)+2(\cos(e+}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a*Sin[e + f*x])^(3/2)*(b*Tan[e + f*x])^n,x]
```

```
[Out] (8*(9 + 2*n)*AppellF1[5/4 + n/2, n, 5/2, 9/4 + n/2, Tan[(e + f*x)/2]^2, -Ta
n[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^3*Sin[(e + f*x)/2]*(a*Sin[e + f*x])^(3/2
)*(b*Tan[e + f*x])^n)/(f*(5 + 2*n)*(2*(9 + 2*n)*AppellF1[5/4 + n/2, n, 5/2,
 9/4 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2 + 2
*(5*AppellF1[9/4 + n/2, n, 7/2, 13/4 + n/2, Tan[(e + f*x)/2]^2, -Tan[(e + f
*x)/2]^2] - 2*n*AppellF1[9/4 + n/2, 1 + n, 5/2, 13/4 + n/2, Tan[(e + f*x)/2
]^2, -Tan[(e + f*x)/2]^2])*(-1 + Cos[e + f*x])))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{a\sin\left(fx+e\right)}\,\left(b\tan\left(fx+e\right)\right)^{n}a\sin\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^n*a*sin(f*x + e), x)
```

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

$$\int \left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e))^(3/2)*(b*tan(f*x + e))^n, x)
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \left(a \sin \left(f x + e\right)\right)^{\frac{3}{2}} \left(b \tan \left(f x + e\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^n,x)
[Out] int((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(a \sin \left(f x + e\right)\right)^{\frac{3}{2}} \left(b \tan \left(f x + e\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(3/2)*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((a*sin(f*x + e))^(3/2)*(b*tan(f*x + e))^n, x)
```

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

$$\int {\left(a\,\sin\left(e+f\,x\right)\right)}^{3/2}\,{\left(b\,\tan\left(e+f\,x\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^n,x)
[Out] int((a*sin(e + f*x))^(3/2)*(b*tan(e + f*x))^n, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(3/2)*(b*tan(f*x+e))**n,x)
[Out] Timed out
```

3.186 $\int \sqrt{a \sin(e+fx)}\, (b \tan(e+fx))^n \, dx$

Optimal. Leaf size=89

$$\frac{2\sqrt{a \sin(e+fx)}\, \cos^2(e+fx)^{\frac{n+1}{2}} (b \tan(e+fx))^{n+1} {}_2F_1\left(\frac{n+1}{2}, \frac{1}{4}(2n+3); \frac{1}{4}(2n+7); \sin^2(e+fx)\right)}{bf(2n+3)}$$

```
[Out] 2*(cos(f*x+e)^2)^(1/2+1/2*n)*hypergeom([1/2+1/2*n, 3/4+1/2*n],[7/4+1/2*n],s
in(f*x+e)^2)*(a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^(1+n)/b/f/(3+2*n)
```

Rubi [A] time = 0.11, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$\frac{2\sqrt{a \sin(e+fx)}\, \cos^2(e+fx)^{\frac{n+1}{2}} (b \tan(e+fx))^{n+1} {}_2F_1\left(\frac{n+1}{2}, \frac{1}{4}(2n+3); \frac{1}{4}(2n+7); \sin^2(e+fx)\right)}{bf(2n+3)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^n,x]
```

```
[Out] (2*(Cos[e + f*x]^2)^((1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (3 + 2*n)/4, (
7 + 2*n)/4, Sin[e + f*x]^2]*Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^(1 + n))/
(b*f*(3 + 2*n))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \sqrt{a\sin(e+fx)}\,(b\tan(e+fx))^n\,dx = \frac{\left(a\cos^{1+n}(e+fx)(a\sin(e+fx))^{-1-n}(b\tan(e+fx))^{1+n}\right)\int \cos^{-n}(e+fx)(}{b}$$
$$= \frac{2\cos^2(e+fx)^{\frac{1+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{4}(3+2n);\frac{1}{4}(7+2n);\sin^2(e+fx)\right)\sqrt{a\sin(e-}}{bf(3+2n)}$$

Mathematica [A] time = 1.62, size = 91, normalized size = 1.02

$$\frac{\sin(2(e+fx))\sqrt{a\sin(e+fx)}\,\cos^2(e+fx)^{\frac{n-1}{2}}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n+3);\frac{1}{4}(2n+7);\sin^2(e+fx)\right)}{f(2n+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((Cos[e + f*x]^2)^((-1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (3 + 2*n)/4, (7
 + 2*n)/4, Sin[e + f*x]^2]*Sqrt[a*Sin[e + f*x]]*Sin[2*(e + f*x)]*(b*Tan[e +
 f*x])^n)/(f*(3 + 2*n))
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{a\sin\left(fx+e\right)}\,\left(b\tan\left(fx+e\right)\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^n, x)
```

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

$$\int \sqrt{a\sin\left(fx+e\right)}\,\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^n, x)
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \sqrt{a\sin\left(fx+e\right)}\,\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^n,x)
```

```
[Out] int((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^n,x)
```

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

$$\int \sqrt{a \sin\left(fx+e\right)} \left(b \tan\left(fx+e\right)\right)^{n} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))^(1/2)*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^n, x)
```

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

$$\int \sqrt{a\,\sin\left(e+f\,x\right)}\,{\left(b\,\tan\left(e+f\,x\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^n,x)
```

```
[Out] int((a*sin(e + f*x))^(1/2)*(b*tan(e + f*x))^n, x)
```

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

$$\int \sqrt{a \sin\left(e+fx\right)} \left(b \tan\left(e+fx\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sin(f*x+e))**(1/2)*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral(sqrt(a*sin(e + f*x))*(b*tan(e + f*x))**n, x)
```

3.187 $\int \frac{(b\tan(e+fx))^n}{\sqrt{a\sin(e+fx)}}\,dx$

Optimal. Leaf size=89

$$\frac{2\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n+1);\frac{1}{4}(2n+5);\sin^2(e+fx)\right)}{bf(2n+1)\sqrt{a\sin(e+fx)}}$$

```
[Out] 2*(cos(f*x+e)^2)^(1/2+1/2*n)*hypergeom([1/2+1/2*n, 1/4+1/2*n],[5/4+1/2*n],s
in(f*x+e)^2)*(b*tan(f*x+e))^(1+n)/b/f/(1+2*n)/(a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$\frac{2\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n+1);\frac{1}{4}(2n+5);\sin^2(e+fx)\right)}{bf(2n+1)\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^n/Sqrt[a*Sin[e + f*x]],x]
```

```
[Out] (2*(Cos[e + f*x]^2)^((1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (1 + 2*n)/4, (
5 + 2*n)/4, Sin[e + f*x]^2]*(b*Tan[e + f*x])^(1 + n))/(b*f*(1 + 2*n)*Sqrt[a
*Sin[e + f*x]])
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^n}{\sqrt{a\sin(e+fx)}}\,dx = \frac{\left(a\cos^{1+n}(e+fx)(a\sin(e+fx))^{-1-n}(b\tan(e+fx))^{1+n}\right)\int\cos^{-n}(e+fx)(a\sin(e+fx)}{b}$$

$$= \frac{2\cos^2(e+fx)^{\frac{1+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{4}(1+2n);\frac{1}{4}(5+2n);\sin^2(e+fx)\right)(b\tan(e+fx))^{1+n}}{bf(1+2n)\sqrt{a\sin(e+fx)}}$$

Mathematica [A] time = 1.31, size = 89, normalized size = 1.00

$$\frac{\sin(2(e+fx))\cos^2(e+fx)^{\frac{n-1}{2}}(b\tan(e+fx))^n\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n+1);\frac{1}{4}(2n+5);\sin^2(e+fx)\right)}{(2fn+f)\sqrt{a\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^n/Sqrt[a*Sin[e + f*x]],x]
```

```
[Out] ((Cos[e + f*x]^2)^((-1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (1 + 2*n)/4, (5
 + 2*n)/4, Sin[e + f*x]^2]*Sin[2*(e + f*x)]*(b*Tan[e + f*x])^n)/((f + 2*f*n
)*Sqrt[a*Sin[e + f*x]])
```

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

$$\text{integral}\left(\frac{\sqrt{a\sin\left(fx+e\right)}\left(b\tan\left(fx+e\right)\right)^n}{a\sin\left(fx+e\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^n/(a*sin(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^n/(a*sin(f*x + e)), x)
```

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

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^n}{\sqrt{a\sin\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^n/(a*sin(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n/sqrt(a*sin(f*x + e)), x)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{\left(b \tan \left(f x + e\right)\right)^{n}}{\sqrt{a \sin \left(f x + e\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^n/(a*sin(f*x+e))^(1/2),x)
[Out] int((b*tan(f*x+e))^n/(a*sin(f*x+e))^(1/2),x)
```

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

$$\int \frac{\left(b \tan \left(f x + e\right)\right)^{n}}{\sqrt{a \sin \left(f x + e\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^n/(a*sin(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^n/sqrt(a*sin(f*x + e)), x)
```

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

$$\int \frac{{\left(b\,\mathrm{tan}\left(e+f\,x\right)\right)}^n}{\sqrt{a\,\sin\left(e+f\,x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n/(a*sin(e + f*x))^(1/2),x)
[Out] int((b*tan(e + f*x))^n/(a*sin(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(b \tan \left(e + f x\right)\right)^{n}}{\sqrt{a \sin \left(e + f x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**n/(a*sin(f*x+e))**(1/2),x)
[Out] Integral((b*tan(e + f*x))**n/sqrt(a*sin(e + f*x)), x)
```

3.188 $\int \frac{(b\tan(e+fx))^n}{(a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=89

$$-\frac{2\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n-1);\frac{1}{4}(2n+3);\sin^2(e+fx)\right)}{bf(1-2n)(a\sin(e+fx))^{3/2}}$$

```
[Out] -2*(cos(f*x+e)^2)^(1/2+1/2*n)*hypergeom([1/2+1/2*n, -1/4+1/2*n],[3/4+1/2*n]
,sin(f*x+e)^2)*(b*tan(f*x+e))^(1+n)/b/f/(1-2*n)/(a*sin(f*x+e))^(3/2)
```

Rubi [A] time = 0.12, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {2602, 2577}

$$-\frac{2\cos^2(e+fx)^{\frac{n+1}{2}}(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n-1);\frac{1}{4}(2n+3);\sin^2(e+fx)\right)}{bf(1-2n)(a\sin(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^n/(a*Sin[e + f*x])^(3/2),x]
```

```
[Out] (-2*(Cos[e + f*x]^2)^((1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (-1 + 2*n)/4,
 (3 + 2*n)/4, Sin[e + f*x]^2]*(b*Tan[e + f*x])^(1 + n))/(b*f*(1 - 2*n)*(a*S
in[e + f*x])^(3/2))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^n}{(a\sin(e+fx))^{3/2}}\,dx = \frac{\left(a\cos^{1+n}(e+fx)(a\sin(e+fx))^{-1-n}(b\tan(e+fx))^{1+n}\right)\int \cos^{-n}(e+fx)(a\sin(e+fx))}{b}$$
$$= -\frac{2\cos^2(e+fx)^{\frac{1+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{4}(-1+2n);\frac{1}{4}(3+2n);\sin^2(e+fx)\right)(b\tan(e+fx))^{1+n}}{bf(1-2n)(a\sin(e+fx))^{3/2}}$$

Mathematica [A] time = 1.96, size = 90, normalized size = 1.01

$$\frac{2b\sqrt{a\sin(e+fx)}\,\cos^2(e+fx)^{\frac{n-1}{2}}(b\tan(e+fx))^{n-1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{4}(2n-1);\frac{1}{4}(2n+3);\sin^2(e+fx)\right)}{a^2f(2n-1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^n/(a*Sin[e + f*x])^(3/2),x]
```

```
[Out] (2*b*(Cos[e + f*x]^2)^((-1 + n)/2)*Hypergeometric2F1[(1 + n)/2, (-1 + 2*n)/
4, (3 + 2*n)/4, Sin[e + f*x]^2]*Sqrt[a*Sin[e + f*x]]*(b*Tan[e + f*x])^(-1 +
 n))/(a^2*f*(-1 + 2*n))
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)}\left(b\tan\left(fx+e\right)\right)^n}{a^2\cos\left(fx+e\right)^2-a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^n/(a*sin(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(a*sin(f*x + e))*(b*tan(f*x + e))^n/(a^2*cos(f*x + e)^2 - a^2
), x)
```

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

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^n}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^n/(a*sin(f*x+e))^(3/2),x, algorithm="giac")
```

[Out] integrate((b*tan(f*x + e))^n/(a*sin(f*x + e))^(3/2), x)

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{n}}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*tan(f*x+e))^n/(a*sin(f*x+e))^(3/2),x)

[Out] int((b*tan(f*x+e))^n/(a*sin(f*x+e))^(3/2),x)

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

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{n}}{\left(a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*tan(f*x+e))^n/(a*sin(f*x+e))^(3/2),x, algorithm="maxima")

[Out] integrate((b*tan(f*x + e))^n/(a*sin(f*x + e))^(3/2), x)

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

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{n}}{\left(a\,\sin\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*tan(e + f*x))^n/(a*sin(e + f*x))^(3/2),x)

[Out] int((b*tan(e + f*x))^n/(a*sin(e + f*x))^(3/2), x)

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

$$\int \frac{\left(b\tan\left(e+fx\right)\right)^{n}}{\left(a\sin\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*tan(f*x+e))**n/(a*sin(f*x+e))**(3/2),x)

[Out] Integral((b*tan(e + f*x))**n/(a*sin(e + f*x))**(3/2), x)

3.189 $\int (a\cos(e+fx))^m (b\tan(e+fx))^n \, dx$

Optimal. Leaf size=86

$$\frac{(a\cos(e+fx))^m (b\tan(e+fx))^{n+1} \cos^2(e+fx)^{\frac{1}{2}(-m+n+1)} {}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(-m+n+1);\frac{n+3}{2};\sin^2(e+fx)\right)}{bf(n+1)}$$

```
[Out] (a*cos(f*x+e))^m*(cos(f*x+e)^2)^(1/2-1/2*m+1/2*n)*hypergeom([1/2+1/2*n, 1/2
-1/2*m+1/2*n],[3/2+1/2*n],sin(f*x+e)^2)*(b*tan(f*x+e))^(1+n)/b/f/(1+n)
```

Rubi [A] time = 0.10, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2603, 2617}

$$\frac{(a\cos(e+fx))^m (b\tan(e+fx))^{n+1} \cos^2(e+fx)^{\frac{1}{2}(-m+n+1)} {}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(-m+n+1);\frac{n+3}{2};\sin^2(e+fx)\right)}{bf(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Cos[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((a*Cos[e + f*x])^m*(Cos[e + f*x]^2)^((1 - m + n)/2)*Hypergeometric2F1[(1 +
 n)/2, (1 - m + n)/2, (3 + n)/2, Sin[e + f*x]^2]*(b*Tan[e + f*x])^(1 + n))/
(b*f*(1 + n))
```

Rule 2603

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Cos[e + f*x])^FracPart[m]*(Sec[e + f*x]/a)^FracPar
t[m], Int[(b*Tan[e + f*x])^n/(Sec[e + f*x]/a)^m, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] && !IntegerQ[m] && !IntegerQ[n]
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] && !IntegerQ[m/2]
```

Rubi steps

$$\int (a\cos(e+fx))^m(b\tan(e+fx))^n\,dx = \left((a\cos(e+fx))^m\left(\frac{\sec(e+fx)}{a}\right)^m\right)\int\left(\frac{\sec(e+fx)}{a}\right)^{-m}(b\tan(e+fx))^{n}$$

$$= \frac{(a\cos(e+fx))^m\cos^2(e+fx)^{\frac{1}{2}(1-m+n)}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{2}(1-m+n);\frac{3+n}{2};\sin^2\right.}{bf(1+n)}$$

Mathematica [A] time = 0.58, size = 81, normalized size = 0.94

$$\frac{\tan(e+fx)\sec^2(e+fx)^{m/2}(a\cos(e+fx))^m(b\tan(e+fx))^n\,{}_2F_1\left(\frac{m+2}{2},\frac{n+1}{2};\frac{n+3}{2};-\tan^2(e+fx)\right)}{f(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Cos[e + f*x])^m*(b*Tan[e + f*x])^n,x]
[Out] ((a*Cos[e + f*x])^m*Hypergeometric2F1[(2 + m)/2, (1 + n)/2, (3 + n)/2, -Tan
[e + f*x]^2]*(Sec[e + f*x]^2)^(m/2)*Tan[e + f*x]*(b*Tan[e + f*x])^n)/(f*(1
+ n))
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\cos\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cos(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a*cos(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

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

$$\int\left(a\cos\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cos(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*cos(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

maple [F] time = 1.47, size = 0, normalized size = 0.00

$$\int\left(a\cos\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*cos(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

```
[Out] int((a*cos(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(a\cos\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cos(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((a*cos(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

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

$$\int \left(a\,\cos\left(e+f\,x\right)\right)^{m}\left(b\tan\left(e+f\,x\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*cos(e + f*x))^m*(b*tan(e + f*x))^n,x)
```

```
[Out] int((a*cos(e + f*x))^m*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(a\cos\left(e+fx\right)\right)^{m}\left(b\tan\left(e+fx\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cos(f*x+e))**m*(b*tan(f*x+e))**n,x)
```

```
[Out] Integral((a*cos(e + f*x))**m*(b*tan(e + f*x))**n, x)
```

3.190 $\int (a\tan(e+fx))^m (b\tan(e+fx))^n \, dx$

Optimal. Leaf size=63

$$\frac{(a\tan(e+fx))^{m+1}(b\tan(e+fx))^n \, {}_2F_1\left(1,\frac{1}{2}(m+n+1);\frac{1}{2}(m+n+3);-\tan^2(e+fx)\right)}{af(m+n+1)}$$

```
[Out] hypergeom([1, 1/2+1/2*m+1/2*n],[3/2+1/2*m+1/2*n],-tan(f*x+e)^2)*(a*tan(f*x+
e))^(1+m)*(b*tan(f*x+e))^n/a/f/(1+m+n)
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {20, 3476, 364}

$$\frac{(a\tan(e+fx))^{m+1}(b\tan(e+fx))^n \, {}_2F_1\left(1,\frac{1}{2}(m+n+1);\frac{1}{2}(m+n+3);-\tan^2(e+fx)\right)}{af(m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Tan[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + m + n)/2, (3 + m + n)/2, -Tan[e + f*x]^2]*(a*Tan
[e + f*x])^(1 + m)*(b*Tan[e + f*x])^n)/(a*f*(1 + m + n))
```

Rule 20

```
Int[(u_.)*((a_.)*(v_))^(m_)*((b_.)*(v_))^(n_), x_Symbol] :> Dist[(b^IntPart
[n]*(b*v)^FracPart[n])/(a^IntPart[n]*(a*v)^FracPart[n]), Int[u*(a*v)^(m + n
), x], x] /; FreeQ[{a, b, m, n}, x] && !IntegerQ[m] && !IntegerQ[n] && !
IntegerQ[m + n]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int (a\tan(e+fx))^m(b\tan(e+fx))^n\,dx = \left((a\tan(e+fx))^{-n}(b\tan(e+fx))^n\right)\int (a\tan(e+fx))^{m+n}\,dx$$
$$= \frac{\left(a(a\tan(e+fx))^{-n}(b\tan(e+fx))^n\right)\text{Subst}\left(\int \frac{x^{m+n}}{a^2+x^2}\,dx,x,a\tan(e+fx)\right)}{f}$$
$$= \frac{{}_2F_1\left(1,\frac{1}{2}(1+m+n);\frac{1}{2}(3+m+n);-\tan^2(e+fx)\right)(a\tan(e+fx))^{1+m}(b}{af(1+m+n)}$$

Mathematica [A] time = 0.07, size = 66, normalized size = 1.05

$$\frac{\tan(e+fx)(a\tan(e+fx))^m(b\tan(e+fx))^n\,{}_2F_1\left(1,\frac{1}{2}(m+n+1);\frac{1}{2}(m+n+1)+1;-\tan^2(e+fx)\right)}{f(m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Tan[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + m + n)/2, 1 + (1 + m + n)/2, -Tan[e + f*x]^2]*Ta
n[e + f*x]*(a*Tan[e + f*x])^m*(b*Tan[e + f*x])^n)/(f*(1 + m + n))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\tan\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*tan(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((a*tan(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

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

$$\int \left(a\tan\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*tan(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((a*tan(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

maple [F] time = 0.81, size = 0, normalized size = 0.00

$$\int \left(a\tan\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*tan(f*x+e))^m*(b*tan(f*x+e))^n,x)
[Out] int((a*tan(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(a\tan\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*tan(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((a*tan(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\left(a\,\mathrm{tan}\left(e+f\,x\right)\right)}^m\,{\left(b\,\mathrm{tan}\left(e+f\,x\right)\right)}^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*tan(e + f*x))^m*(b*tan(e + f*x))^n,x)
[Out] int((a*tan(e + f*x))^m*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(a\tan\left(e+fx\right)\right)^{m}\left(b\tan\left(e+fx\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*tan(f*x+e))**m*(b*tan(f*x+e))**n,x)
[Out] Integral((a*tan(e + f*x))**m*(b*tan(e + f*x))**n, x)
```

3.191 $\int \sqrt{d\cot(e+fx)}\,\tan^4(e+fx)\,dx$

Optimal. Leaf size=232

$$\frac{2d^3}{5f(d\cot(e+fx))^{5/2}}-\frac{2d}{f\sqrt{d\cot(e+fx)}}-\frac{\sqrt{d}\,\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,f}+\frac{\sqrt{d}\,\log\left(\sqrt{d}\,\cot(\right.}{}$$

```
[Out] 2/5*d^3/f/(d*cot(f*x+e))^(5/2)+1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^
(1/2))*d^(1/2)/f*2^(1/2)-1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))
*d^(1/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))
^(1/2))*d^(1/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(
f*x+e))^(1/2))*d^(1/2)/f*2^(1/2)-2*d/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2d^3}{5f(d\cot(e+fx))^{5/2}}-\frac{2d}{f\sqrt{d\cot(e+fx)}}-\frac{\sqrt{d}\,\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,f}+\frac{\sqrt{d}\,\log\left(\sqrt{d}\,\cot(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x]^4,x]
```

```
[Out] (Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) +
(2*d^3)/(5*f*(d*Cot[e + f*x])^(5/2)) - (2*d)/(f*Sqrt[d*Cot[e + f*x]]) - (Sq
rt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(
2*Sqrt[2]*f) + (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d
*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \sqrt{d\cot(e+fx)}\,\tan^4(e+fx)\,dx = d^4\int \frac{1}{(d\cot(e+fx))^{7/2}}\,dx$$

$$= \frac{2d^3}{5f(d\cot(e+fx))^{5/2}} - d^2\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$$

$$= \frac{2d^3}{5f(d\cot(e+fx))^{5/2}} - \frac{2d}{f\sqrt{d\cot(e+fx)}} + \int \sqrt{d\cot(e+fx)}\,dx$$

$$= \frac{2d^3}{5f(d\cot(e+fx))^{5/2}} - \frac{2d}{f\sqrt{d\cot(e+fx)}} - \frac{d\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+\ldots\right)}{f}$$

$$= \frac{2d^3}{5f(d\cot(e+fx))^{5/2}} - \frac{2d}{f\sqrt{d\cot(e+fx)}} - \frac{(2d)\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot\ldots}\right)}{f}$$

$$= \frac{2d^3}{5f(d\cot(e+fx))^{5/2}} - \frac{2d}{f\sqrt{d\cot(e+fx)}} + \frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e\ldots}\right)}{f}$$

$$= \frac{2d^3}{5f(d\cot(e+fx))^{5/2}} - \frac{2d}{f\sqrt{d\cot(e+fx)}} - \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \ldots\right)}{2\sqrt{2}f}$$

$$= \frac{2d^3}{5f(d\cot(e+fx))^{5/2}} - \frac{2d}{f\sqrt{d\cot(e+fx)}} - \frac{\sqrt{d}\,\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\ldots\right)}{2\sqrt{2}f}$$

$$= \frac{\sqrt{d}\,\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{\sqrt{d}\,\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{2\ldots}{5f(d\cot(\ldots}$$

Mathematica [C] time = 0.08, size = 45, normalized size = 0.19

$$\frac{2\tan^3(e+fx)\sqrt{d\cot(e+fx)}\ {}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\cot^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x]^4,x]
```

```
[Out] (2*Sqrt[d*Cot[e + f*x]]*Hypergeometric2F1[-5/4, 1, -1/4, -Cot[e + f*x]^2]*T
an[e + f*x]^3)/(5*f)
```

fricas [B] time = 0.58, size = 606, normalized size = 2.61

$$20\sqrt{2}f\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}df\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}-\sqrt{2}f\sqrt{\frac{\sqrt{2}df^3\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{3}{4}}\sin(fx+e)+d^2f^2\sqrt{\frac{d^2}{f^4}}\sin(fx+e)+d^3\cos(fx+e)}{\sin(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}+d^2}{d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] 1/20*(20*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*d*f*sqrt(d*cos(f*x + e)
/sin(f*x + e))*(d^2/f^4)^(1/4) - sqrt(2)*f*sqrt((sqrt(2)*d*f^3*sqrt(d*cos(f
*x + e)/sin(f*x + e))*(d^2/f^4)^(3/4)*sin(f*x + e) + d^2*f^2*sqrt(d^2/f^4)*
sin(f*x + e) + d^3*cos(f*x + e))/sin(f*x + e))*(d^2/f^4)^(1/4) + d^2)/d^2)*
cos(f*x + e)^3 + 20*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*d*f*sqrt(d*c
os(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4) - sqrt(2)*f*sqrt(-(sqrt(2)*d*f^3*
sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(3/4)*sin(f*x + e) - d^2*f^2*sq
rt(d^2/f^4)*sin(f*x + e) - d^3*cos(f*x + e))/sin(f*x + e))*(d^2/f^4)^(1/4)
- d^2)/d^2)*cos(f*x + e)^3 + 5*sqrt(2)*f*(d^2/f^4)^(1/4)*cos(f*x + e)^3*log
((sqrt(2)*d*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(3/4)*sin(f*x +
 e) + d^2*f^2*sqrt(d^2/f^4)*sin(f*x + e) + d^3*cos(f*x + e))/sin(f*x + e))
- 5*sqrt(2)*f*(d^2/f^4)^(1/4)*cos(f*x + e)^3*log(-(sqrt(2)*d*f^3*sqrt(d*cos
(f*x + e)/sin(f*x + e))*(d^2/f^4)^(3/4)*sin(f*x + e) - d^2*f^2*sqrt(d^2/f^4
)*sin(f*x + e) - d^3*cos(f*x + e))/sin(f*x + e)) - 8*(6*cos(f*x + e)^2 - 1)
*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3)
```

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

$$\int\sqrt{d\cot\left(fx+e\right)}\tan\left(fx+e\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*cot(f*x + e))*tan(f*x + e)^4, x)
```

maple [C] time = 0.75, size = 728, normalized size = 3.14

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(5i\left(\cos^{2}\left(fx+e\right)\right)\sin\left(fx+e\right)\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(1/2)*tan(f*x+e)^4,x)
```

```
[Out] -1/10/f*(-1+cos(f*x+e))*(5*I*cos(f*x+e)^2*sin(f*x+e)*EllipticPi((-(-sin(f*x
+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))
/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*
x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-5*I*cos(f*x+e)^2*sin(f*x+e)*EllipticPi
((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1
+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2
)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+5*cos(f*x+e)^2*sin(f*x+e)*
EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(
1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*
x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+5*cos(f*x+e)^2*s
in(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2
*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+
e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-10*cos
(f*x+e)^2*sin(f*x+e)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/
2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+
e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+12*cos
(f*x+e)^3*2^(1/2)-12*cos(f*x+e)^2*2^(1/2)-2*cos(f*x+e)*2^(1/2)+2*2^(1/2))*(
1+cos(f*x+e))^2*(d*cos(f*x+e)/sin(f*x+e))^(1/2)/cos(f*x+e)^3/sin(f*x+e)^3*2
^(1/2)
```

maxima [A] time = 0.46, size = 207, normalized size = 0.89

$$-\frac{d^5\left(\frac{5\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\ldots\right.}{\ldots}\right.}{d^4}\ldots\right)}{20f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] -1/20*d^5*(5*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(
f*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*
sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*s
qrt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^4 - 8*(d^2 - 5
*d^2/tan(f*x + e)^2)/(d^4*(d/tan(f*x + e))^(5/2)))/f
```

mupad [B] time = 2.58, size = 97, normalized size = 0.42

$$\frac{\frac{2d^3}{5}-\frac{2d^3}{\tan(e+fx)^2}}{f\left(\frac{d}{\tan(e+fx)}\right)^{5/2}}-\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{f}+\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(d*cot(e + f*x))^(1/2),x)
```

```
[Out] ((2*d^3)/5 - (2*d^3)/tan(e + f*x)^2)/(f*(d/tan(e + f*x))^(5/2)) - ((-1)^(1/
4)*d^(1/2)*atan(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/f + ((-1)^(1/
4)*d^(1/2)*atanh(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/f
```

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

$$\int \sqrt{d \cot\left(e+fx\right)}\, \tan^4\left(e+fx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(1/2)*tan(f*x+e)**4,x)
```

```
[Out] Integral(sqrt(d*cot(e + f*x))*tan(e + f*x)**4, x)
```

3.192 $\int \sqrt{d\cot(e+fx)}\,\tan^3(e+fx)\,dx$

Optimal. Leaf size=214

$$\frac{2d^2}{3f(d\cot(e+fx))^{3/2}} - \frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f} + \frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d}\right.}{2\sqrt{2}f}$$

```
[Out] 2/3*d^2/f/(d*cot(f*x+e))^(3/2)-1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^
(1/2))*d^(1/2)/f*2^(1/2)+1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))
*d^(1/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))
^(1/2))*d^(1/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(
f*x+e))^(1/2))*d^(1/2)/f*2^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {16, 3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{2d^2}{3f(d\cot(e+fx))^{3/2}} - \frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f} + \frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d}\right.}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x]^3,x]
```

```
[Out] -((Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 + (2*d^2)/(3*f*(d*Cot[e + f*x])^(3/2)) - (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Co
t[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) + (Sqrt[d]*Log[Sq
rt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \sqrt{d\cot(e+fx)}\,\tan^3(e+fx)\,dx = d^3\int \frac{1}{(d\cot(e+fx))^{5/2}}\,dx$$

$$= \frac{2d^2}{3f(d\cot(e+fx))^{3/2}} - d\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= \frac{2d^2}{3f(d\cot(e+fx))^{3/2}} + \frac{d^2\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2d^2}{3f(d\cot(e+fx))^{3/2}} + \frac{\left(2d^2\right)\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2d^2}{3f(d\cot(e+fx))^{3/2}} + \frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d\,\text{Subst}\,(}{}$$

$$= \frac{2d^2}{3f(d\cot(e+fx))^{3/2}} - \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} -$$

$$= \frac{2d^2}{3f(d\cot(e+fx))^{3/2}} - \frac{\sqrt{d}\,\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx}\right.}{2\sqrt{2}f}$$

$$= -\frac{\sqrt{d}\,\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{\sqrt{d}\,\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{}{3f(d\,\text{c}}$$

Mathematica [C] time = 0.05, size = 45, normalized size = 0.21

$$\frac{2\tan^2(e+fx)\sqrt{d\cot(e+fx)}\;{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\cot^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x]^3,x]
```

```
[Out] (2*Sqrt[d*Cot[e + f*x]]*Hypergeometric2F1[-3/4, 1, 1/4, -Cot[e + f*x]^2]*Ta
n[e + f*x]^2)/(3*f)
```

fricas [B] time = 0.50, size = 568, normalized size = 2.65

$$-\frac{12\sqrt{2}\,f\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}\,f^3\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{3}{4}}-\sqrt{2}\,f^3\sqrt{\frac{f^2\sqrt{\frac{d^2}{f^4}}\sin(fx+e)+\sqrt{2}\,f\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}\sin(fx+e)+d\cos(fx+e)}{\sin(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{3}{4}}+d^2}{d^2}\right)\text{co}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(12*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*f^3*sqrt(d*cos(f*x + e
)/sin(f*x + e))*(d^2/f^4)^(3/4) - sqrt(2)*f^3*sqrt((f^2*sqrt(d^2/f^4)*sin(f
*x + e) + sqrt(2)*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4)*sin(f
*x + e) + d*cos(f*x + e))/sin(f*x + e))*(d^2/f^4)^(3/4) + d^2)/d^2)*cos(f*x
 + e)^2 + 12*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*f^3*sqrt(d*cos(f*x
+ e)/sin(f*x + e))*(d^2/f^4)^(3/4) - sqrt(2)*f^3*sqrt((f^2*sqrt(d^2/f^4)*si
n(f*x + e) - sqrt(2)*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4)*si
n(f*x + e) + d*cos(f*x + e))/sin(f*x + e))*(d^2/f^4)^(3/4) - d^2)/d^2)*cos(
f*x + e)^2 - 3*sqrt(2)*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2*log((f^2*sqrt(d^2/f
^4)*sin(f*x + e) + sqrt(2)*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1
/4)*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e)) + 3*sqrt(2)*f*(d^2/f^4)^(1
/4)*cos(f*x + e)^2*log((f^2*sqrt(d^2/f^4)*sin(f*x + e) - sqrt(2)*f*sqrt(d*c
os(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4)*sin(f*x + e) + d*cos(f*x + e))/si
n(f*x + e)) + 8*(cos(f*x + e)^2 - 1)*sqrt(d*cos(f*x + e)/sin(f*x + e)))/(f*
cos(f*x + e)^2)
```

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

$$\int\sqrt{d\cot\left(fx+e\right)}\tan\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^3,x, algorithm="giac")
```

[Out] integrate(sqrt(d*cot(f*x + e))*tan(f*x + e)^3, x)

maple [C] time = 0.68, size = 548, normalized size = 2.56

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(3i\cos\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \mathrm{EllipticPi}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*cot(f*x+e))^(1/2)*tan(f*x+e)^3,x)

[Out] 1/6/f*(-1+cos(f*x+e))*(3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))*(1+cos(f*x+e))^2*(d*cos(f*x+e)/sin(f*x+e))^(1/2)/sin(f*x+e)^2/cos(f*x+e)^2*2^(1/2)

maxima [A] time = 0.63, size = 190, normalized size = 0.89

$$\frac{d^4\left(\frac{3\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\cdots}\right.}{}\right.}{d^2}\right.}{12f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^3,x, algorithm="maxima")
```

```
[Out] 1/12*d^4*(3*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/d^2 + 8/(d^2*(d/t
an(f*x + e))^(3/2)))/f
```

mupad [B] time = 2.47, size = 83, normalized size = 0.39

$$\frac{2\,d^2}{3\,f\,{\left(\frac{d}{\tan\left(e+f\,x\right)}\right)}^{3/2}}-\frac{{\left(-1\right)}^{1/4}\,\sqrt{d}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{f}-\frac{{\left(-1\right)}^{1/4}\,\sqrt{d}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^3*(d*cot(e + f*x))^(1/2),x)
```

```
[Out] (2*d^2)/(3*f*(d/tan(e + f*x))^(3/2)) - ((-1)^(1/4)*d^(1/2)*atan(((-1)^(1/4)
*(d/tan(e + f*x))^(1/2))/d^(1/2))*1i)/f - ((-1)^(1/4)*d^(1/2)*atanh(((-1)^(
1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2))*1i)/f
```

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

$$\int \sqrt{d\cot\left(e+fx\right)}\,\tan^3\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(1/2)*tan(f*x+e)**3,x)
```

```
[Out] Integral(sqrt(d*cot(e + f*x))*tan(e + f*x)**3, x)
```

3.193 $\int \sqrt{d\cot(e+fx)}\tan^2(e+fx)\,dx$

Optimal. Leaf size=210

$$\frac{2d}{f\sqrt{d\cot(e+fx)}}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot}\right.}{2\sqrt{2}f}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/2*a
rctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/4*ln(d^(1
/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/2)-1/4*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/
2)+2*d/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2d}{f\sqrt{d\cot(e+fx)}}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot}\right.}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x]^2,x]
```

```
[Out] -((Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 + (2*d)/(f*Sqrt[d*Cot[e + f*x]]) + (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e +
f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) - (Sqrt[d]*Log[Sqrt[d]
+ Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \sqrt{d\cot(e+fx)}\,\tan^2(e+fx)\,dx = d^2\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$$
$$= \frac{2d}{f\sqrt{d\cot(e+fx)}} - \int \sqrt{d\cot(e+fx)}\,dx$$
$$= \frac{2d}{f\sqrt{d\cot(e+fx)}} + \frac{d\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$
$$= \frac{2d}{f\sqrt{d\cot(e+fx)}} + \frac{(2d)\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$
$$= \frac{2d}{f\sqrt{d\cot(e+fx)}} - \frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d\,\text{Subst}\left(\int\right.}{}$$
$$= \frac{2d}{f\sqrt{d\cot(e+fx)}} + \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} + -$$
$$= \frac{2d}{f\sqrt{d\cot(e+fx)}} + \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f}$$
$$= -\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{}{f\sqrt{d\,\text{c}}}$$

Mathematica [C] time = 0.05, size = 36, normalized size = 0.17

$$\frac{2d\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\cot^2(e+fx)\right)}{f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x]^2,x]
```

```
[Out] (2*d*Hypergeometric2F1[-1/4, 1, 3/4, -Cot[e + f*x]^2])/(f*Sqrt[d*Cot[e + f*
x]])
```

fricas [B] time = 0.58, size = 585, normalized size = 2.79

$$-\frac{4\sqrt{2} f \left(\frac{d^2}{f^4}\right)^{\frac{1}{4}} \arctan\left(-\frac{\sqrt{2} d f \sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}} - \sqrt{2} f \sqrt{\frac{\sqrt{2} d f^3 \sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{d^2}{f^4}\right)^{\frac{3}{4}}\sin\left(fx+e\right) + d^2 f^2 \sqrt{\frac{d^2}{f^4}}\sin\left(fx+e\right) + d^3\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}} + d^2}{d^2}\right)\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(4*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*d*f*sqrt(d*cos(f*x + e)/
sin(f*x + e))*(d^2/f^4)^(1/4) - sqrt(2)*f*sqrt((sqrt(2)*d*f^3*sqrt(d*cos(f*
x + e)/sin(f*x + e))*(d^2/f^4)^(3/4)*sin(f*x + e) + d^2*f^2*sqrt(d^2/f^4)*s
in(f*x + e) + d^3*cos(f*x + e))/sin(f*x + e))*(d^2/f^4)^(1/4) + d^2)/d^2)*c
os(f*x + e) + 4*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*d*f*sqrt(d*cos(f
*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4) - sqrt(2)*f*sqrt(-(sqrt(2)*d*f^3*sqrt
(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(3/4)*sin(f*x + e) - d^2*f^2*sqrt(d
^2/f^4)*sin(f*x + e) - d^3*cos(f*x + e))/sin(f*x + e))*(d^2/f^4)^(1/4) - d^
2)/d^2)*cos(f*x + e) + sqrt(2)*f*(d^2/f^4)^(1/4)*cos(f*x + e)*log((sqrt(2)*
d*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(3/4)*sin(f*x + e) + d^2*
f^2*sqrt(d^2/f^4)*sin(f*x + e) + d^3*cos(f*x + e))/sin(f*x + e)) - sqrt(2)*
f*(d^2/f^4)^(1/4)*cos(f*x + e)*log(-(sqrt(2)*d*f^3*sqrt(d*cos(f*x + e)/sin(
f*x + e))*(d^2/f^4)^(3/4)*sin(f*x + e) - d^2*f^2*sqrt(d^2/f^4)*sin(f*x + e)
 - d^3*cos(f*x + e))/sin(f*x + e)) - 8*sqrt(d*cos(f*x + e)/sin(f*x + e))*si
n(f*x + e))/(f*cos(f*x + e))
```

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

$$\int \sqrt{d\cot\left(fx+e\right)}\tan\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*cot(f*x + e))*tan(f*x + e)^2, x)
```

maple [C] time = 0.62, size = 660, normalized size = 3.14

$$\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\left(1+\cos\left(fx+e\right)\right)^{2}\left(-1+\cos\left(fx+e\right)\right)\left(i\sin\left(fx+e\right)\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}-\frac{i}{2},\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(1/2)*tan(f*x+e)^2,x)
```

```
[Out] 1/2/f*(d*cos(f*x+e)/sin(f*x+e))^(1/2)*(1+cos(f*x+e))^2*(-1+cos(f*x+e))*(I*s
in(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2
*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+
e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-I*sin(
f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))
/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+sin(f*x+e
)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2
^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(
f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+sin(f*x+e)*Ell
ipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2
))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e
))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2*sin(f*x+e)*Ellipt
icF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*
x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-s
in(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))/c
os(f*x+e)/sin(f*x+e)^3*2^(1/2)
```

maxima [A] time = 0.81, size = 189, normalized size = 0.90

$$\frac{d^{3}\left(\frac{\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\,\log\left(-\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{d}{\tan\right.}}\right.}{\sqrt{}}}{d^{2}}\right.}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] 1/4*d^3*((2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x
+ e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt
(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(
d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^2 + 8/(d^2*sqrt(d/
tan(f*x + e))))/f
```

mupad [B] time = 2.48, size = 80, normalized size = 0.38

$$\frac{2\,d}{f\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}+\frac{{\left(-1\right)}^{1/4}\,\sqrt{d}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)}{f}-\frac{{\left(-1\right)}^{1/4}\,\sqrt{d}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(d*cot(e + f*x))^(1/2),x)
```

```
[Out] (2*d)/(f*(d/tan(e + f*x))^(1/2)) + ((-1)^(1/4)*d^(1/2)*atan(((-1)^(1/4)*(d/
tan(e + f*x))^(1/2))/d^(1/2)))/f - ((-1)^(1/4)*d^(1/2)*atanh(((-1)^(1/4)*(d
/tan(e + f*x))^(1/2))/d^(1/2)))/f
```

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

$$\int \sqrt{d \cot\left(e + fx\right)}\, \tan^{2}\left(e + fx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(1/2)*tan(f*x+e)**2,x)
```

```
[Out] Integral(sqrt(d*cot(e + f*x))*tan(e + f*x)**2, x)
```

3.194 $\int \sqrt{d\cot(e+fx)}\tan(e+fx)\,dx$

Optimal. Leaf size=192

$$\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+$$

```
[Out] 1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)-1/2*ar
ctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/4*ln(d^(1/
2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/2)-1/4*l
n(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/2
)
```

Rubi [A] time = 0.14, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.474, Rules used = {16, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x],x]
```

```
[Out] (Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) +
(Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]
)/(2*Sqrt[2]*f) - (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqr
t[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

```
IntegerQ[n]
```

Rubi steps

$$\int \sqrt{d\cot(e+fx)}\,\tan(e+fx)\,dx = d\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= -\frac{d^2\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{\left(2d^2\right)\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} - \frac{d\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e\right.}{f}$$

$$= \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} + \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}-}{-d+\sqrt{2}\sqrt{d}}\right.}{2}$$

$$= \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} - \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\right.}{}$$

$$= \frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{\sqrt{d}\log\left(\right.}{}$$

Mathematica [A] time = 0.19, size = 132, normalized size = 0.69

$$\frac{d\sqrt{\cot(e+fx)}\left(\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\log\left(\cot(e+fx)+\sqrt{2}\sqrt{\cot(e+fx)}+1\right)+2\tan^{-1}\right.}{2\sqrt{2}f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Cot[e + f*x]]*Tan[e + f*x],x]

[Out] (d*Sqrt[Cot[e + f*x]]*(2*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]] - 2*ArcTan[
1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[
e + f*x]] - Log[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(2*Sqrt[2]
*f*Sqrt[d*Cot[e + f*x]])
```

fricas [B] time = 0.59, size = 487, normalized size = 2.54

$$\sqrt{2}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}\,f^3\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{d^2}{f^4}\right)^{\frac{3}{4}}-\sqrt{2}\,f^3\sqrt{\frac{f^2\sqrt{\frac{d^2}{f^4}}\sin\left(fx+e\right)+\sqrt{2}\,f\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}\sin\left(fx+e\right)+d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{d^2}{f^4}\right.}{d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e),x, algorithm="fricas")
```

```
[Out] sqrt(2)*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*f^3*sqrt(d*cos(f*x + e)/sin(f*x +
e))*(d^2/f^4)^(3/4) - sqrt(2)*f^3*sqrt((f^2*sqrt(d^2/f^4)*sin(f*x + e) + sq
rt(2)*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4)*sin(f*x + e) + d*
cos(f*x + e))/sin(f*x + e))*(d^2/f^4)^(3/4) + d^2)/d^2) + sqrt(2)*(d^2/f^4)
^(1/4)*arctan(-(sqrt(2)*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(d^2/f^4)^(3/
4) - sqrt(2)*f^3*sqrt((f^2*sqrt(d^2/f^4)*sin(f*x + e) - sqrt(2)*f*sqrt(d*co
s(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4)*sin(f*x + e) + d*cos(f*x + e))/sin
(f*x + e))*(d^2/f^4)^(3/4) - d^2)/d^2) - 1/4*sqrt(2)*(d^2/f^4)^(1/4)*log((f
^2*sqrt(d^2/f^4)*sin(f*x + e) + sqrt(2)*f*sqrt(d*cos(f*x + e)/sin(f*x + e))
*(d^2/f^4)^(1/4)*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e)) + 1/4*sqrt(2)
*(d^2/f^4)^(1/4)*log((f^2*sqrt(d^2/f^4)*sin(f*x + e) - sqrt(2)*f*sqrt(d*cos
(f*x + e)/sin(f*x + e))*(d^2/f^4)^(1/4)*sin(f*x + e) + d*cos(f*x + e))/sin(
f*x + e))
```

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

$$\int\sqrt{d\cot\left(fx+e\right)}\,\tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*cot(f*x + e))*tan(f*x + e), x)
```

maple [C] time = 0.51, size = 292, normalized size = 1.52

$$-\frac{\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(-1+\cos\left(fx+e\right)\right)\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(i\,\mathrm{EllipticPi}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(1/2)*tan(f*x+e),x)
```

```
[Out] -1/2/f*(d*cos(f*x+e)/sin(f*x+e))^(1/2)*(-1+cos(f*x+e))*(-(-sin(f*x+e)-1+cos
(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*((
-1+cos(f*x+e))/sin(f*x+e))^(1/2)*(I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))
/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*EllipticPi((-(-sin(f*x+e)-1+cos
(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-EllipticPi((-(-sin(f*x+e)
-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-EllipticPi((-(-sin(
f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2)))/sin(f*x+e)^2
/cos(f*x+e)*(1+cos(f*x+e))^2*2^(1/2)
```

maxima [A] time = 0.75, size = 167, normalized size = 0.87

$$-\frac{d^{2}\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\ldots}{\ldots}\right)}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2)*tan(f*x+e),x, algorithm="maxima")
```

```
[Out] -1/4*d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x
+ e)))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
2*sqrt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt
(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sqrt(
d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/f
```

mupad [B] time = 0.21, size = 61, normalized size = 0.32

$$\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)1\mathrm{i}}{f}+\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)1\mathrm{i}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)*(d*cot(e + f*x))^(1/2),x)
```

```
[Out] ((-1)^(1/4)*d^(1/2)*atan(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2))*1i)/f
 + ((-1)^(1/4)*d^(1/2)*atanh(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2))*1
i)/f
```

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

$$\int \sqrt{d\cot\left(e+fx\right)}\,\tan\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(1/2)*tan(f*x+e),x)
```

```
[Out] Integral(sqrt(d*cot(e + f*x))*tan(e + f*x), x)
```

3.195 $\int \sqrt{d \cot(e+fx)}\, dx$

Optimal. Leaf size=192

$$-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+$$

```
[Out] 1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)-1/2*ar
ctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)-1/4*ln(d^(1/
2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/2)+1/4*l
n(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/2
)
```

Rubi [A] time = 0.12, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]
)/(2*Sqrt[2]*f) + (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqr
t[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
```

```
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \sqrt{d\cot(e+fx)}\,dx = -\frac{d\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{(2d)\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} - \frac{d\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} - \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}-2x}{-d+\sqrt{2}\sqrt{d}x-x^2}\,dx, x,\right.}{2\sqrt{2}f}$$

$$= -\frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} + \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\cot(e+f\right.}{2\sqrt{2}}$$

$$= \frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\,\text{co}\right.}{}$$

Mathematica [C] time = 0.04, size = 40, normalized size = 0.21

$$-\frac{2(d\cot(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)}{3df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (-2*(d*Cot[e + f*x])^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x]^2])
/(3*d*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \sqrt{d \cot(fx+e)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*cot(f*x + e)), x)
```

maple [A] time = 0.14, size = 160, normalized size = 0.83

$$-\frac{d\sqrt{2}\,\ln\left(\frac{d\cot(fx+e)-(d^2)^{\frac{1}{4}}\sqrt{d\cot(fx+e)}\,\sqrt{2}+\sqrt{d^2}}{d\cot(fx+e)+(d^2)^{\frac{1}{4}}\sqrt{d\cot(fx+e)}\,\sqrt{2}+\sqrt{d^2}}\right)}{4f\,(d^2)^{\frac{1}{4}}}-\frac{d\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot(fx+e)}}{(d^2)^{\frac{1}{4}}}+1\right)}{2f\,(d^2)^{\frac{1}{4}}}+\frac{d\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot(fx+e)}}{(d^2)^{\frac{1}{4}}}\right.}{2f\,(d^2)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(1/2),x)
```

```
[Out] -1/4/f*d/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1
/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(
1/2)+(d^2)^(1/2)))-1/2/f*d/(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(
d*cot(f*x+e))^(1/2)+1)+1/2/f*d/(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1
/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.53, size = 165, normalized size = 0.86

$$-\frac{d\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\ldots}{}\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/4*d*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x +
e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*
sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt(d
```

```
/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(d)
*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/f
```

mupad [B] time = 2.55, size = 50, normalized size = 0.26

$$-\frac{(-1)^{1/4}\sqrt{d}\left(\operatorname{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)-\operatorname{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(e + f*x))^(1/2),x)
[Out] -((-1)^(1/4)*d^(1/2)*(atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)) - a
tanh(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))))/f
```

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

$$\int\sqrt{d\cot\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(1/2),x)
[Out] Integral(sqrt(d*cot(e + f*x)), x)
```

3.196 $\int \cot(e+fx)\sqrt{d\cot(e+fx)}\,dx$

Optimal. Leaf size=209

$$-\frac{2\sqrt{d\cot(e+fx)}}{f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot\right.}{2\sqrt{2}f}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/2*a
rctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)-1/4*ln(d^(1
/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/2)+1/4*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))*d^(1/2)/f*2^(1/
2)-2*(d*cot(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.17, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {16, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{2\sqrt{d\cot(e+fx)}}{f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot\right.}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]*Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -((Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 - (2*Sqrt[d*Cot[e + f*x]])/f - (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x]
 - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) + (Sqrt[d]*Log[Sqrt[d] + Sq
rt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \cot(e+fx)\sqrt{d\cot(e+fx)}\,dx = \frac{\int (d\cot(e+fx))^{3/2}\,dx}{d}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{f} - d\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{f} + \frac{d^2\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\,(d^2+x^2)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{f} + \frac{(2d^2)\,\mathrm{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{f} + \frac{d\,\mathrm{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d\,\mathrm{Subst}\left(\int \frac{d\cdots}{d^2\cdots}\right.}{\cdots}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{\sqrt{d}\,\mathrm{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} - \frac{\sqrt{d}\cdots}{\cdots}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} + \cdots$$

$$= -\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{2\sqrt{d\cot(e\cdots}}{f}$$

Mathematica [A] time = 0.25, size = 162, normalized size = 0.78

$$-\frac{(d\cot(e+fx))^{3/2}\left(8\sqrt{\cot(e+fx)}+\sqrt{2}\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\sqrt{2}\log\left(\cot(e+fx)+\sqrt{2}\cdots\right.\right.}{4df\cot^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]*Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -1/4*((d*Cot[e + f*x])^(3/2)*(2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x
]]] - 2*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + 8*Sqrt[Cot[e + f*x
]] + Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]] - Sqrt[2]*L
og[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(d*f*Cot[e + f*x]^(3/2)
)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \sqrt{d\cot\left(fx+e\right)}\cot\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*cot(f*x + e))*cot(f*x + e), x)
```

maple [A] time = 0.12, size = 172, normalized size = 0.82

$$-\frac{2\sqrt{d\cot\left(fx+e\right)}}{f}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f}-\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)*(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -2*(d*cot(f*x+e))^(1/2)/f+1/2/f*(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1
/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f*(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)
^(1/4)*(d*cot(f*x+e))^(1/2)+1)+1/4/f*(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)+(
d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)-(d^2)^(1
/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))
```

maxima [A] time = 0.81, size = 178, normalized size = 0.85

$$\frac{2\sqrt{2}\sqrt{d}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+2\sqrt{2}\sqrt{d}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+\sqrt{2}\sqrt{d}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\cdots}}\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*sqrt(d)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d)) + 2*sqrt(2)*sqrt(d)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d)) + sqrt(2)*sqrt(d)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - sqrt(2)*sqrt(d)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 8*sqrt(d/tan(f*x + e)))/
f
```

mupad [B] time = 2.57, size = 74, normalized size = 0.35

$$-\frac{2\sqrt{d\cot\left(e+fx\right)}}{f}-\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)1\mathrm{i}}{f}-\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)1\mathrm{i}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)*(d*cot(e + f*x))^(1/2),x)
```

```
[Out] - (2*(d*cot(e + f*x))^(1/2))/f - ((-1)^(1/4)*d^(1/2)*atan(((-1)^(1/4)*(d*co
t(e + f*x))^(1/2))/d^(1/2))*1i)/f - ((-1)^(1/4)*d^(1/2)*atanh(((-1)^(1/4)*(
d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/f
```

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

$$\int\sqrt{d\cot\left(e+fx\right)}\cot\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*cot(e + f*x))*cot(e + f*x), x)
```

3.197 $\int \cot^2(e+fx)\sqrt{d\cot(e+fx)}\,dx$

Optimal. Leaf size=214

$$-\frac{2(d\cot(e+fx))^{3/2}}{3df}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d}\right.}{2\sqrt{2}f}$$

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/d/f-1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(
1/2))*d^(1/2)/f*2^(1/2)+1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))*
d^(1/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^
(1/2))*d^(1/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f
*x+e))^(1/2))*d^(1/2)/f*2^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{2(d\cot(e+fx))^{3/2}}{3df}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d}\right.}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^2*Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -((Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 - (2*(d*Cot[e + f*x])^(3/2))/(3*d*f) + (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[
e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) - (Sqrt[d]*Log[Sqrt
[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \cot^2(e+fx)\sqrt{d\cot(e+fx)}\,dx = \frac{\int (d\cot(e+fx))^{5/2}\,dx}{d^2}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3df} - \int \sqrt{d\cot(e+fx)}\,dx$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3df} + \frac{d\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3df} + \frac{(2d)\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3df} - \frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d\,\text{Subst}\left(\right.}{}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3df} + \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} +$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3df} + \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right.}{2\sqrt{2}f}$$

$$= -\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{2(d\cot}{}$$

Mathematica [C] time = 0.05, size = 42, normalized size = 0.20

$$\frac{2(d\cot(e+fx))^{3/2}\left({}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)-1\right)}{3df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^2*Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (2*(d*Cot[e + f*x])^(3/2)*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x
]^2]))/(3*d*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \sqrt{d \cot\left(fx+e\right)} \cot\left(fx+e\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*cot(f*x + e))*cot(f*x + e)^2, x)
```

maple [A] time = 0.18, size = 178, normalized size = 0.83

$$-\frac{2\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}{3df}+\frac{d\sqrt{2}\ \ln\left(\frac{d\cot\left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\ \sqrt{2}+\sqrt{d^{2}}}{d\cot\left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\ \sqrt{2}+\sqrt{d^{2}}}\right)}{4f\left(d^{2}\right)^{\frac{1}{4}}}+\frac{d\sqrt{2}\ \arctan\left(\frac{\sqrt{2}\ \sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\left(d^{2}\right)^{\frac{1}{4}}}-\frac{d\sqrt{2}\ \mathrm{arc}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^2*(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/d/f+1/4/f*d/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)-
(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)^(
1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))+1/2/f*d/(d^2)^(1/4)*2^(1/2)
*arctan(2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f*d/(d^2)^(1/4)*2^(
1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.94, size = 187, normalized size = 0.87

$$\frac{3\,d^2\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}}{}\cdots\right.}{12\,d f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/12*(3*d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d)) - 8*(d/tan(f*x +
e))^(3/2))/(d*f)
```

mupad [B] time = 2.60, size = 76, normalized size = 0.36

$$\frac{(-1)^{1/4}\sqrt{d}\ \mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{f}-\frac{2\left(d\cot\left(e+f\,x\right)\right)^{3/2}}{3\,d\,f}-\frac{(-1)^{1/4}\sqrt{d}\ \mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^2*(d*cot(e + f*x))^(1/2),x)
```

```
[Out] ((-1)^(1/4)*d^(1/2)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/f -
(2*(d*cot(e + f*x))^(3/2))/(3*d*f) - ((-1)^(1/4)*d^(1/2)*atanh(((-1)^(1/4)*
(d*cot(e + f*x))^(1/2))/d^(1/2)))/f
```

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

$$\int\sqrt{d\cot\left(e+fx\right)}\,\cot^2\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**2*(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*cot(e + f*x))*cot(e + f*x)**2, x)
```

3.198 $\int \cot^3(e+fx)\sqrt{d\cot(e+fx)}\,dx$

Optimal. Leaf size=231

$$-\frac{2(d\cot(e+fx))^{5/2}}{5d^2f}+\frac{2\sqrt{d\cot(e+fx)}}{f}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(\right.}{}$$

```
[Out] -2/5*(d*cot(f*x+e))^(5/2)/d^2/f+1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d
^(1/2))*d^(1/2)/f*2^(1/2)-1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2)
)*d^(1/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e)
)^(1/2))*d^(1/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot
(f*x+e))^(1/2))*d^(1/2)/f*2^(1/2)+2*(d*cot(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.20, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{2(d\cot(e+fx))^{5/2}}{5d^2f}+\frac{2\sqrt{d\cot(e+fx)}}{f}+\frac{\sqrt{d}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{\sqrt{d}\log\left(\sqrt{d}\cot(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^3*Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) +
(2*Sqrt[d*Cot[e + f*x]])/f - (2*(d*Cot[e + f*x])^(5/2))/(5*d^2*f) + (Sqrt[d
]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sq
rt[2]*f) - (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot
[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \cot^3(e+fx)\sqrt{d\cot(e+fx)}\,dx = \frac{\int (d\cot(e+fx))^{7/2}\,dx}{d^3}$$

$$= -\frac{2(d\cot(e+fx))^{5/2}}{5d^2f} - \frac{\int (d\cot(e+fx))^{3/2}\,dx}{d}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^2f} + d\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^2f} - \frac{d^2\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^2f} - \frac{\left(2d^2\right)\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^2f} - \frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^2f} + \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{}}{2\sqrt{2}f}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^2f} + \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{}}{2\sqrt{2}f}$$

$$= \frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{2\sqrt{d\cot(e}}{f}$$

Mathematica [A] time = 0.45, size = 172, normalized size = 0.74

$$\frac{\sqrt{d\cot(e+fx)}\left(-8\cot^{\frac{5}{2}}(e+fx)+40\sqrt{\cot(e+fx)}+5\sqrt{2}\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-5\sqrt{2}\log\right.}{20f\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^3*Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (Sqrt[d*Cot[e + f*x]]*(10*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]] -
10*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + 40*Sqrt[Cot[e + f*x]] -
 8*Cot[e + f*x]^(5/2) + 5*Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[
e + f*x]] - 5*Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/
(20*f*Sqrt[Cot[e + f*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int\sqrt{d\cot\left(fx+e\right)}\cot\left(fx+e\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*cot(f*x + e))*cot(f*x + e)^3, x)
```

maple [A] time = 0.18, size = 190, normalized size = 0.82

$$-\frac{2\left(d\cot\left(fx+e\right)\right)^{\frac{5}{2}}}{5d^{2}f}+\frac{2\sqrt{d\cot\left(fx+e\right)}}{f}-\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot}}{\left(d^{2}\right)}\right.}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^3*(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -2/5*(d*cot(f*x+e))^(5/2)/d^2/f+2*(d*cot(f*x+e))^(1/2)/f-1/2/f*(d^2)^(1/4)*
2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)+1/2/f*(d^2)^(1/4
)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/4/f*(d^2)^(
1/4)*2^(1/2)*ln((d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2
)^(1/2))/(d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)
))
```

maxima [A] time = 0.56, size = 199, normalized size = 0.86

$$-\frac{10\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+10\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+5\sqrt{2}\,d^{\frac{5}{2}}\log\left(\sqrt{2}\sqrt{d}\sqrt{\right.}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/20*(10*sqrt(2)*d^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/ta
n(f*x + e)))/sqrt(d)) + 10*sqrt(2)*d^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqr
t(d) - 2*sqrt(d/tan(f*x + e)))/sqrt(d)) + 5*sqrt(2)*d^(5/2)*log(sqrt(2)*sqr
t(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 5*sqrt(2)*d^(5/2)*log(-sq
rt(2)*sqrt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 40*d^2*sqrt(d/ta
n(f*x + e)) + 8*(d/tan(f*x + e))^(5/2))/(d^2*f)
```

mupad [B] time = 2.87, size = 90, normalized size = 0.39

$$\frac{2\sqrt{d\cot\left(e+fx\right)}}{f}-\frac{2\left(d\cot\left(e+fx\right)\right)^{5/2}}{5d^2f}+\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(e+fx\right)}}{\sqrt{d}}\right)1\mathrm{i}}{f}+\frac{(-1)^{1/4}\sqrt{d}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(\right.}}{\sqrt{d}}\right.}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^3*(d*cot(e + f*x))^(1/2),x)
```

```
[Out] (2*(d*cot(e + f*x))^(1/2))/f - (2*(d*cot(e + f*x))^(5/2))/(5*d^2*f) + ((-1)
^(1/4)*d^(1/2)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/f + ((
-1)^(1/4)*d^(1/2)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2)*1i)/d^(1/2)))/f
```

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

$$\int\sqrt{d\cot\left(e+fx\right)}\cot^{3}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**3*(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*cot(e + f*x))*cot(e + f*x)**3, x)
```

3.199 $\int (d\cot(e+fx))^{3/2}\tan^5(e+fx)\,dx$

Optimal. Leaf size=234

$$-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+$$

```
[Out] 2/5*d^4/f/(d*cot(f*x+e))^(5/2)+1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^
(1/2)/d^(1/2))/f*2^(1/2)-1/2*d^(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/
d^(1/2))/f*2^(1/2)-1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot
(f*x+e))^(1/2))/f*2^(1/2)+1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)
*(d*cot(f*x+e))^(1/2))/f*2^(1/2)-2*d^2/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2d^4}{5f(d\cot(e+fx))^{5/2}}-\frac{2d^2}{f\sqrt{d\cot(e+fx)}}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^5,x]
```

```
[Out] (d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) +
(2*d^4)/(5*f*(d*Cot[e + f*x])^(5/2)) - (2*d^2)/(f*Sqrt[d*Cot[e + f*x]]) - (
d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])
/(2*Sqrt[2]*f) + (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt
[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int (d\cot(e+fx))^{3/2}\tan^5(e+fx)\,dx = d^5\int \frac{1}{(d\cot(e+fx))^{7/2}}\,dx$$

$$= \frac{2d^4}{5f(d\cot(e+fx))^{5/2}} - d^3\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$$

$$= \frac{2d^4}{5f(d\cot(e+fx))^{5/2}} - \frac{2d^2}{f\sqrt{d\cot(e+fx)}} + d\int \sqrt{d\cot(e+fx)}\,dx$$

$$= \frac{2d^4}{5f(d\cot(e+fx))^{5/2}} - \frac{2d^2}{f\sqrt{d\cot(e+fx)}} - \frac{d^2\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e$$

$$= \frac{2d^4}{5f(d\cot(e+fx))^{5/2}} - \frac{2d^2}{f\sqrt{d\cot(e+fx)}} - \frac{\left(2d^2\right)\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\,c}}{f}$$

$$= \frac{2d^4}{5f(d\cot(e+fx))^{5/2}} - \frac{2d^2}{f\sqrt{d\cot(e+fx)}} + \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(}}{f}$$

$$= \frac{2d^4}{5f(d\cot(e+fx))^{5/2}} - \frac{2d^2}{f\sqrt{d\cot(e+fx)}} - \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x}{2\sqrt{2}f}$$

$$= \frac{2d^4}{5f(d\cot(e+fx))^{5/2}} - \frac{2d^2}{f\sqrt{d\cot(e+fx)}} - \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)\right.}{2\sqrt{2}f}$$

$$= \frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{}{5f(d\,\text{co}}$$

Mathematica [C] time = 0.07, size = 45, normalized size = 0.19

$$\frac{2\tan^4(e+fx)(d\cot(e+fx))^{3/2}\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\cot^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^5,x]
```

```
[Out] (2*(d*Cot[e + f*x])^(3/2)*Hypergeometric2F1[-5/4, 1, -1/4, -Cot[e + f*x]^2]
*Tan[e + f*x]^4)/(5*f)
```

fricas [B] time = 0.62, size = 617, normalized size = 2.64

$$20\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} f\arctan\left(-\frac{\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} d^4 f\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}+d^6-\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} f\sqrt{\frac{d^9\cos(fx+e)+\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{3}{4}} d^4 f^3\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\sin(fx+e)+\sqrt{\frac{d^6}{f^4}}d^6 f^2\sin(fx+e}{\sin(fx+e)}}}{d^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^5,x, algorithm="fricas")
```

```
[Out] 1/20*(20*sqrt(2)*(d^6/f^4)^(1/4)*f*arctan(-(sqrt(2)*(d^6/f^4)^(1/4)*d^4*f*s
qrt(d*cos(f*x + e)/sin(f*x + e)) + d^6 - sqrt(2)*(d^6/f^4)^(1/4)*f*sqrt((d^
9*cos(f*x + e) + sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*
x + e))*sin(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e)))/d
^6)*cos(f*x + e)^3 + 20*sqrt(2)*(d^6/f^4)^(1/4)*f*arctan(-(sqrt(2)*(d^6/f^4
)^(1/4)*d^4*f*sqrt(d*cos(f*x + e)/sin(f*x + e)) - d^6 - sqrt(2)*(d^6/f^4)^(
1/4)*f*sqrt((d^9*cos(f*x + e) - sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(
f*x + e)/sin(f*x + e))*sin(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/s
in(f*x + e)))/d^6)*cos(f*x + e)^3 + 5*sqrt(2)*(d^6/f^4)^(1/4)*f*cos(f*x + e
)^3*log((d^9*cos(f*x + e) + sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x
+ e)/sin(f*x + e))*sin(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f
*x + e)) - 5*sqrt(2)*(d^6/f^4)^(1/4)*f*cos(f*x + e)^3*log((d^9*cos(f*x + e)
 - sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*
x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e)) - 8*(6*d*cos(f*x
 + e)^2 - d)*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e))/(f*cos(f*x + e
)^3)
```

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

$$\int\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}\tan\left(fx+e\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^5,x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(3/2)*tan(f*x + e)^5, x)
```

maple [C] time = 0.68, size = 728, normalized size = 3.11

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(5i\left(\cos^{2}\left(fx+e\right)\right)\sin\left(fx+e\right)\operatorname{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+\right.}{\sin\left(fx+e\right)}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(3/2)*tan(f*x+e)^5,x)
```

```
[Out] 1/10/f*(-1+cos(f*x+e))*(5*I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x
+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(
1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x
+e))/sin(f*x+e))^(1/2)*cos(f*x+e)^2-5*I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x
+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(f*x+e)*((-1+cos(f*x+e))/s
in(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+
e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*cos(f*x+e)^2-5*cos(f*x+e)^2*sin(f*x+e)*E
llipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1
/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x
+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+10*cos(f*x+e)^2*s
in(f*x+e)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1
/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x
+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-5*cos(f*x+e)^2*si
n(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*
I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e
))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-12*cos(
f*x+e)^3*2^(1/2)+12*cos(f*x+e)^2*2^(1/2)+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))*(1
+cos(f*x+e))^2*(d*cos(f*x+e)/sin(f*x+e))^(3/2)/sin(f*x+e)^2/cos(f*x+e)^4*2^
(1/2)
```

maxima [A]   time = 0.55, size = 207, normalized size = 0.88

$$-\frac{d^6\left(\frac{5\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\ \cdots\right.}{\cdots}\right.}{d^4}\cdots\right)}{20f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^5,x, algorithm="maxima")
```

```
[Out] -1/20*d^6*(5*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(
f*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*
sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*s
qrt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^4 - 8*(d^2 - 5
*d^2/tan(f*x + e)^2)/(d^4*(d/tan(f*x + e))^(5/2)))/f
```

mupad [B]   time = 2.58, size = 97, normalized size = 0.41

$$\frac{\frac{2d^4}{5}-\frac{2d^4}{\tan(e+fx)^2}}{f\left(\frac{d}{\tan(e+fx)}\right)^{5/2}}-\frac{(-1)^{1/4}d^{3/2}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{f}+\frac{(-1)^{1/4}d^{3/2}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^5*(d*cot(e + f*x))^(3/2),x)
```

```
[Out] ((2*d^4)/5 - (2*d^4)/tan(e + f*x)^2)/(f*(d/tan(e + f*x))^(5/2)) - ((-1)^(1/
4)*d^(3/2)*atan(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/f + ((-1)^(1/
4)*d^(3/2)*atanh(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/f
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(3/2)*tan(f*x+e)**5,x)
```

```
[Out] Timed out
```

3.200 $\int (d\cot(e+fx))^{3/2}\tan^4(e+fx)\,dx$

Optimal. Leaf size=214

$$-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}$$

```
[Out] 2/3*d^3/f/(d*cot(f*x+e))^(3/2)-1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^
(1/2)/d^(1/2))/f*2^(1/2)+1/2*d^(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/
d^(1/2))/f*2^(1/2)-1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot
(f*x+e))^(1/2))/f*2^(1/2)+1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)
*(d*cot(f*x+e))^(1/2))/f*2^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{2d^3}{3f(d\cot(e+fx))^{3/2}}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d}\right.}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^4,x]
```

```
[Out] -((d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 + (2*d^3)/(3*f*(d*Cot[e + f*x])^(3/2)) - (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Co
t[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) + (d^(3/2)*Log[Sq
rt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int (d\cot(e+fx))^{3/2}\tan^4(e+fx)\,dx = d^4\int \frac{1}{(d\cot(e+fx))^{5/2}}\,dx$$

$$= \frac{2d^3}{3f(d\cot(e+fx))^{3/2}} - d^2\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= \frac{2d^3}{3f(d\cot(e+fx))^{3/2}} + \frac{d^3\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2d^3}{3f(d\cot(e+fx))^{3/2}} + \frac{\left(2d^3\right)\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2d^3}{3f(d\cot(e+fx))^{3/2}} + \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d^2\,\text{Sub}}{}$$

$$= \frac{2d^3}{3f(d\cot(e+fx))^{3/2}} - \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f}$$

$$= \frac{2d^3}{3f(d\cot(e+fx))^{3/2}} - \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+f}\right.}{2\sqrt{2}f}$$

$$= -\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{}{3f(d}$$

Mathematica [C] time = 0.05, size = 45, normalized size = 0.21

$$\frac{2\tan^3(e+fx)(d\cot(e+fx))^{3/2}\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\cot^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^4,x]
```

```
[Out] (2*(d*Cot[e + f*x])^(3/2)*Hypergeometric2F1[-3/4, 1, 1/4, -Cot[e + f*x]^2]*
Tan[e + f*x]^3)/(3*f)
```

fricas [B] time = 0.65, size = 587, normalized size = 2.74

$$-\frac{12\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} f \arctan\left(-\frac{d^6+\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{3}{4}} d f^3 \sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}-\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{3}{4}} f^3 \sqrt{\frac{\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} d f \sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\sin\left(fx+e\right)+d^3\cos\left(fx+e\right)+\sqrt{\frac{d^6}{f^4}}\, f^2 \sin\left(fx+e\right)}{\sin\left(fx+e\right)}}}{d^6}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] -1/12*(12*sqrt(2)*(d^6/f^4)^(1/4)*f*arctan(-(d^6 + sqrt(2)*(d^6/f^4)^(3/4)*
d*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e)) - sqrt(2)*(d^6/f^4)^(3/4)*f^3*sqrt(
(sqrt(2)*(d^6/f^4)^(1/4)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e)
 + d^3*cos(f*x + e) + sqrt(d^6/f^4)*f^2*sin(f*x + e))/sin(f*x + e)))/d^6)*c
os(f*x + e)^2 + 12*sqrt(2)*(d^6/f^4)^(1/4)*f*arctan((d^6 - sqrt(2)*(d^6/f^4
)^(3/4)*d*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e)) + sqrt(2)*(d^6/f^4)^(3/4)*f
^3*sqrt(-(sqrt(2)*(d^6/f^4)^(1/4)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin
(f*x + e) - d^3*cos(f*x + e) - sqrt(d^6/f^4)*f^2*sin(f*x + e))/sin(f*x + e)
))/d^6)*cos(f*x + e)^2 - 3*sqrt(2)*(d^6/f^4)^(1/4)*f*cos(f*x + e)^2*log((sq
rt(2)*(d^6/f^4)^(1/4)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e) +
d^3*cos(f*x + e) + sqrt(d^6/f^4)*f^2*sin(f*x + e))/sin(f*x + e)) + 3*sqrt(2
)*(d^6/f^4)^(1/4)*f*cos(f*x + e)^2*log(-(sqrt(2)*(d^6/f^4)^(1/4)*d*f*sqrt(d
*cos(f*x + e)/sin(f*x + e))*sin(f*x + e) - d^3*cos(f*x + e) - sqrt(d^6/f^4)
*f^2*sin(f*x + e))/sin(f*x + e)) + 8*(d*cos(f*x + e)^2 - d)*sqrt(d*cos(f*x
+ e)/sin(f*x + e)))/(f*cos(f*x + e)^2)
```

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

$$\int \left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}} \tan\left(fx+e\right)^4 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^4,x, algorithm="giac")
```

[Out] integrate((d*cot(f*x + e))^(3/2)*tan(f*x + e)^4, x)

maple [C] time = 0.67, size = 548, normalized size = 2.56

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(3i\cos\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \mathrm{EllipticF}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*cot(f*x+e))^(3/2)*tan(f*x+e)^4,x)

[Out] -1/6/f*(-1+cos(f*x+e))*(3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))+3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-2*cos(f*x+e)*2^(1/2)+2*2^(1/2))*(1+cos(f*x+e))^2*(d*cos(f*x+e)/sin(f*x+e))^(3/2)/sin(f*x+e)/cos(f*x+e)^3*2^(1/2)

maxima [A] time = 0.59, size = 190, normalized size = 0.89

$$\frac{d^5\left(\frac{3\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\cdots}\right.}{}\right)}{d^2}\right.}{12f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] 1/12*d^5*(3*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/d^2 + 8/(d^2*(d/t
an(f*x + e))^(3/2)))/f
```

mupad [B] time = 2.52, size = 83, normalized size = 0.39

$$\frac{2\,d^3}{3\,f\,\left(\frac{d}{\tan\left(e+f\,x\right)}\right)^{3/2}}-\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{f}-\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(d*cot(e + f*x))^(3/2),x)
```

```
[Out] (2*d^3)/(3*f*(d/tan(e + f*x))^(3/2)) - ((-1)^(1/4)*d^(3/2)*atan(((-1)^(1/4)
*(d/tan(e + f*x))^(1/2))/d^(1/2))*1i)/f - ((-1)^(1/4)*d^(3/2)*atanh(((-1)^(
1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2))*1i)/f
```

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

$$\int \left(d \cot \left(e + f x\right)\right)^{\frac{3}{2}} \tan^{4}\left(e + f x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(3/2)*tan(f*x+e)**4,x)
```

```
[Out] Integral((d*cot(e + f*x))**(3/2)*tan(e + f*x)**4, x)
```

3.201 $\int (d\cot(e+fx))^{3/2}\tan^3(e+fx)\,dx$

Optimal. Leaf size=212

$$\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-$$

```
[Out] -1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+1/2*d
^(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+1/4*d^(3/2)
*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)-1/4*
d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/
2)+2*d^2/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {16, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2d^2}{f\sqrt{d\cot(e+fx)}}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\ldots\right)}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^3,x]
```

```
[Out] -((d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 + (2*d^2)/(f*Sqrt[d*Cot[e + f*x]]) + (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e
+ f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) - (d^(3/2)*Log[Sqrt[d
] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int (d\cot(e+fx))^{3/2}\tan^3(e+fx)\,dx = d^3\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$$

$$= \frac{2d^2}{f\sqrt{d\cot(e+fx)}} - d\int \sqrt{d\cot(e+fx)}\,dx$$

$$= \frac{2d^2}{f\sqrt{d\cot(e+fx)}} + \frac{d^2\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2d^2}{f\sqrt{d\cot(e+fx)}} + \frac{\left(2d^2\right)\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2d^2}{f\sqrt{d\cot(e+fx)}} - \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d^2\,\text{Subst}}{}$$

$$= \frac{2d^2}{f\sqrt{d\cot(e+fx)}} + \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} +$$

$$= \frac{2d^2}{f\sqrt{d\cot(e+fx)}} + \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f}$$

$$= -\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{}{f\sqrt{d}}$$

Mathematica [C] time = 0.05, size = 38, normalized size = 0.18

$$\frac{2d^2\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\cot^2(e+fx)\right)}{f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^3,x]
```

```
[Out] (2*d^2*Hypergeometric2F1[-1/4, 1, 3/4, -Cot[e + f*x]^2])/(f*Sqrt[d*Cot[e +
f*x]])
```

fricas [B] time = 0.54, size = 594, normalized size = 2.80

$$-\frac{4\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} f \arctan\left(-\frac{\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} d^4 f\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}} + d^6 - \sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}} f\sqrt{\frac{d^9\cos(fx+e)+\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{3}{4}} d^4 f^3\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\sin(fx+e)+\sqrt{\frac{d^6}{f^4}}\, d^6 f^2\sin(fx+e)}{\sin(fx+e)}}}{d^6}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(4*sqrt(2)*(d^6/f^4)^(1/4)*f*arctan(-(sqrt(2)*(d^6/f^4)^(1/4)*d^4*f*sq
rt(d*cos(f*x + e)/sin(f*x + e)) + d^6 - sqrt(2)*(d^6/f^4)^(1/4)*f*sqrt((d^9
*cos(f*x + e) + sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*x
 + e))*sin(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e)))/d^
6)*cos(f*x + e) + 4*sqrt(2)*(d^6/f^4)^(1/4)*f*arctan(-(sqrt(2)*(d^6/f^4)^(1
/4)*d^4*f*sqrt(d*cos(f*x + e)/sin(f*x + e)) - d^6 - sqrt(2)*(d^6/f^4)^(1/4)
*f*sqrt((d^9*cos(f*x + e) - sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x
+ e)/sin(f*x + e))*sin(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f
*x + e)))/d^6)*cos(f*x + e) + sqrt(2)*(d^6/f^4)^(1/4)*f*cos(f*x + e)*log((d
^9*cos(f*x + e) + sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f
*x + e))*sin(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e)) -
 sqrt(2)*(d^6/f^4)^(1/4)*f*cos(f*x + e)*log((d^9*cos(f*x + e) - sqrt(2)*(d^
6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e) + sqrt(
d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e)) - 8*d*sqrt(d*cos(f*x + e)/sin(
f*x + e))*sin(f*x + e))/(f*cos(f*x + e))
```

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

$$\int \left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}} \tan\left(fx+e\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^3,x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(3/2)*tan(f*x + e)^3, x)
```

maple [C] time = 0.63, size = 660, normalized size = 3.11

$$\frac{\left(i \sin\left(fx+e\right) \operatorname{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}, \frac{1}{2}-\frac{i}{2}, \frac{\sqrt{2}}{2}\right) \sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \sqrt{-\frac{-\sin\left(f\right.}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(3/2)*tan(f*x+e)^3,x)
```

```
[Out] 1/2/f*(I*sin(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/
2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e
)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1
/2)-I*sin(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),
1/2+1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+s
in(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)
+sin(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1
/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*
x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+sin(
f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,
1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))
/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2*sin(f*x
+e)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(
(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(
1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*cos(f*x+e)*2^(1/2)-2*
2^(1/2))*(1+cos(f*x+e))^2*(-1+cos(f*x+e))*(d*cos(f*x+e)/sin(f*x+e))^(3/2)/s
in(f*x+e)^2/cos(f*x+e)^2*2^(1/2)
```

maxima [A] time = 0.49, size = 189, normalized size = 0.89

$$\frac{d^4\left(\frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\frac{}{\tan}}\right.}{}}{d^2}\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^3,x, algorithm="maxima")
```

```
[Out] 1/4*d^4*((2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x
+ e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt
(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(
d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^2 + 8/(d^2*sqrt(d/
tan(f*x + e))))/f
```

mupad [B] time = 2.49, size = 82, normalized size = 0.39

$$\frac{2\,d^2}{f\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}+\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)}{f}-\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^3*(d*cot(e + f*x))^(3/2),x)
```

```
[Out] (2*d^2)/(f*(d/tan(e + f*x))^(1/2)) + ((-1)^(1/4)*d^(3/2)*atan(((-1)^(1/4)*(
d/tan(e + f*x))^(1/2))/d^(1/2)))/f - ((-1)^(1/4)*d^(3/2)*atanh(((-1)^(1/4)*
(d/tan(e + f*x))^(1/2))/d^(1/2)))/f
```

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

$$\int \left(d \cot \left(e + f x\right)\right)^{\frac{3}{2}} \tan^{3}\left(e + f x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(3/2)*tan(f*x+e)**3,x)
```

```
[Out] Integral((d*cot(e + f*x))**(3/2)*tan(e + f*x)**3, x)
```

3.202 $\int (d\cot(e+fx))^{3/2}\tan^2(e+fx)\,dx$

Optimal. Leaf size=192

$$\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\cdots$$

```
[Out] 1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)-1/2*d^
(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+1/4*d^(3/2)*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)-1/4*d
^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2
)
```

Rubi [A] time = 0.15, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {16, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^2,x]
```

```
[Out] (d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) +
(d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]
)/(2*Sqrt[2]*f) - (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqr
t[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

```
IntegerQ[n]
```

Rubi steps

$$\int (d\cot(e+fx))^{3/2}\tan^2(e+fx)\,dx = d^2\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= -\frac{d^3\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{\left(2d^3\right)\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} - \frac{d^2\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d}\right.}{f}$$

$$= \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} + \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{}}{-d+\sqrt{2}}\right.}{}$$

$$= \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} - \frac{d^{3/2}\log\left(\sqrt{d}+\right.}{}$$

$$= \frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{d^{3/2}\log}{}$$

Mathematica [A] time = 0.03, size = 134, normalized size = 0.70

$$\frac{d^2\sqrt{\cot(e+fx)}\left(\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\log\left(\cot(e+fx)+\sqrt{2}\sqrt{\cot(e+fx)}+1\right)+2\tan^{-}\right.}{2\sqrt{2}f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x]^2,x]
```

```
[Out] (d^2*Sqrt[Cot[e + f*x]]*(2*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]] - 2*ArcTa
n[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Co
t[e + f*x]] - Log[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(2*Sqrt[
2]*f*Sqrt[d*Cot[e + f*x]])
```

fricas [B] time = 0.50, size = 502, normalized size = 2.61

$$\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{d^6+\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{3}{4}}df^3\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}-\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{3}{4}}f^3\sqrt{\frac{\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}}df\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\sin(fx+e)+d^3\cos(fx+e)+\sqrt{}}{\sin(fx+e)}}}{d^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] sqrt(2)*(d^6/f^4)^(1/4)*arctan(-(d^6 + sqrt(2)*(d^6/f^4)^(3/4)*d*f^3*sqrt(d
*cos(f*x + e)/sin(f*x + e)) - sqrt(2)*(d^6/f^4)^(3/4)*f^3*sqrt((sqrt(2)*(d^
6/f^4)^(1/4)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e) + d^3*cos(f
*x + e) + sqrt(d^6/f^4)*f^2*sin(f*x + e))/sin(f*x + e)))/d^6) + sqrt(2)*(d^
6/f^4)^(1/4)*arctan((d^6 - sqrt(2)*(d^6/f^4)^(3/4)*d*f^3*sqrt(d*cos(f*x + e
)/sin(f*x + e)) + sqrt(2)*(d^6/f^4)^(3/4)*f^3*sqrt(-(sqrt(2)*(d^6/f^4)^(1/4
)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e) - d^3*cos(f*x + e) - s
qrt(d^6/f^4)*f^2*sin(f*x + e))/sin(f*x + e)))/d^6) - 1/4*sqrt(2)*(d^6/f^4)^
(1/4)*log((sqrt(2)*(d^6/f^4)^(1/4)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*si
n(f*x + e) + d^3*cos(f*x + e) + sqrt(d^6/f^4)*f^2*sin(f*x + e))/sin(f*x + e
)) + 1/4*sqrt(2)*(d^6/f^4)^(1/4)*log(-(sqrt(2)*(d^6/f^4)^(1/4)*d*f*sqrt(d*c
os(f*x + e)/sin(f*x + e))*sin(f*x + e) - d^3*cos(f*x + e) - sqrt(d^6/f^4)*f
^2*sin(f*x + e))/sin(f*x + e))
```

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

$$\int (d\cot(fx+e))^{\frac{3}{2}}\tan(fx+e)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(3/2)*tan(f*x + e)^2, x)
```

maple [C] time = 0.59, size = 292, normalized size = 1.52

$$-\frac{(1+\cos(fx+e))^2\left(i\,\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin(fx+e)-1+\cos(fx+e)}{\sin(fx+e)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)-i\,\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin(fx+e)-1+\cos(fx+e)}{\sin(fx+e)}},\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(3/2)*tan(f*x+e)^2,x)
```

```
[Out] -1/2/f*(1+cos(f*x+e))^2*(I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+
e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/
sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-EllipticPi((-(-sin(f*x+e)-1+cos(f*
x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-EllipticPi((-(-sin(f*x+e)-1+
cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2)))*((-1+cos(f*x+e))/sin(
f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-
1+cos(f*x+e))/sin(f*x+e))^(1/2)*(-1+cos(f*x+e))*(d*cos(f*x+e)/sin(f*x+e))^(
3/2)/sin(f*x+e)/cos(f*x+e)^2*2^(1/2)
```

maxima [A] time = 0.57, size = 167, normalized size = 0.87

$$-\frac{d^3\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\ldots}{}\right)}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] -1/4*d^3*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x
+ e)))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
2*sqrt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt
(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sqrt(
d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/f
```

mupad [B] time = 2.50, size = 61, normalized size = 0.32

$$\frac{(-1)^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+f\,x)}}}{\sqrt{d}}\right)1\mathrm{i}}{f}+\frac{(-1)^{1/4}\,d^{3/2}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+f\,x)}}}{\sqrt{d}}\right)1\mathrm{i}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(d*cot(e + f*x))^(3/2),x)
```

```
[Out] ((-1)^(1/4)*d^(3/2)*atan(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2))*1i)/f
 + ((-1)^(1/4)*d^(3/2)*atanh(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2))*1
i)/f
```

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

$$\int \left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}\tan^{2}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(3/2)*tan(f*x+e)**2,x)
```

```
[Out] Integral((d*cot(e + f*x))**(3/2)*tan(e + f*x)**2, x)
```

3.203 $\int (d\cot(e+fx))^{3/2}\tan(e+fx)\,dx$

Optimal. Leaf size=192

$$-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}$$

```
[Out] 1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)-1/2*d^
(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)-1/4*d^(3/2)*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)+1/4*d
^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2
)
```

Rubi [A] time = 0.14, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.474, Rules used = {16, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x],x]
```

```
[Out] (d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]
)/(2*Sqrt[2]*f) + (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqr
t[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

IntegerQ[n]

Rubi steps

$$\int (d\cot(e+fx))^{3/2}\tan(e+fx)\,dx = d\int \sqrt{d\cot(e+fx)}\,dx$$
$$= -\frac{d^2\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$
$$= -\frac{\left(2d^2\right)\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$
$$= \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} - \frac{d^2\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot\right.}{f}$$
$$= -\frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} - \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{}}{-d+\sqrt{2}}\right.}{}$$
$$= -\frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} + \frac{d^{3/2}\log\left(\sqrt{d}+\right.}{}$$
$$= \frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{d^{3/2}\log}{}$$

Mathematica [C] time = 0.01, size = 37, normalized size = 0.19

$$-\frac{2(d\cot(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Cot[e + f*x])^(3/2)*Tan[e + f*x],x]
```

```
[Out] (-2*(d*Cot[e + f*x])^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x]^2])
/(3*f)
```

fricas [B] time = 0.62, size = 525, normalized size = 2.73

$$\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}}d^4f\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}+d^6-\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{1}{4}}f\sqrt{\frac{d^9\cos(fx+e)+\sqrt{2}\left(\frac{d^6}{f^4}\right)^{\frac{3}{4}}d^4f^3\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\sin(fx+e)+\sqrt{}}{\sin(fx+e)}}}{d^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e),x, algorithm="fricas")
```

```
[Out] sqrt(2)*(d^6/f^4)^(1/4)*arctan(-(sqrt(2)*(d^6/f^4)^(1/4)*d^4*f*sqrt(d*cos(f
*x + e)/sin(f*x + e)) + d^6 - sqrt(2)*(d^6/f^4)^(1/4)*f*sqrt((d^9*cos(f*x +
 e) + sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin
(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e)))/d^6) + sqrt(
2)*(d^6/f^4)^(1/4)*arctan(-(sqrt(2)*(d^6/f^4)^(1/4)*d^4*f*sqrt(d*cos(f*x +
e)/sin(f*x + e)) - d^6 - sqrt(2)*(d^6/f^4)^(1/4)*f*sqrt((d^9*cos(f*x + e) -
 sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x
+ e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e)))/d^6) + 1/4*sqrt(2
)*(d^6/f^4)^(1/4)*log((d^9*cos(f*x + e) + sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*s
qrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f
*x + e))/sin(f*x + e)) - 1/4*sqrt(2)*(d^6/f^4)^(1/4)*log((d^9*cos(f*x + e)
- sqrt(2)*(d^6/f^4)^(3/4)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x
 + e) + sqrt(d^6/f^4)*d^6*f^2*sin(f*x + e))/sin(f*x + e))
```

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

$$\int \left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}\tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e),x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(3/2)*tan(f*x + e), x)
```

maple [C] time = 0.51, size = 324, normalized size = 1.69

$$-\frac{\left(1+\cos\left(fx+e\right)\right)^2\left(i\,\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin(fx+e)-1+\cos(fx+e)}{\sin(fx+e)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)-i\,\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin(fx+e)-1+\cos(fx+e)}{\sin(fx+e)}},\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(3/2)*tan(f*x+e),x)
```

```
[Out] -1/2/f*(1+cos(f*x+e))^2*(I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+
e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/
sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*EllipticF((-(-sin(f*x+e)-1+cos(f
*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))+EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e
))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))+EllipticPi((-(-sin(f*x+e)-1+cos
(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2)))*((-1+cos(f*x+e))/sin(f*x
+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+c
os(f*x+e))/sin(f*x+e))^(1/2)*(-1+cos(f*x+e))*(d*cos(f*x+e)/sin(f*x+e))^(3/2
)/sin(f*x+e)/cos(f*x+e)^2*2^(1/2)
```

maxima [A] time = 0.91, size = 167, normalized size = 0.87

$$-\frac{d^2\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\cdots\right)}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2)*tan(f*x+e),x, algorithm="maxima")
```

```
[Out] -1/4*d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x
+ e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt
(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(
d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/f
```

mupad [B] time = 2.53, size = 54, normalized size = 0.28

$$-\frac{(-1)^{1/4}\,d^{3/2}\left(\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)-\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)*(d*cot(e + f*x))^(3/2),x)
```

```
[Out] -((-1)^(1/4)*d^(3/2)*(atan(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)) - a
tanh(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2))))/f
```

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

$$\int \left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}\tan\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(3/2)*tan(f*x+e),x)
```

```
[Out] Integral((d*cot(e + f*x))**(3/2)*tan(e + f*x), x)
```

3.204 $\int (d\cot(e+fx))^{3/2}\,dx$

Optimal. Leaf size=210

$$-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}$$

```
[Out] -1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+1/2*d
^(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)-1/4*d^(3/2)
*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)+1/4*
d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/
2)-2*d*(d*cot(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.14, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}+\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] -((d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 - (2*d*Sqrt[d*Cot[e + f*x]])/f - (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*
x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) + (d^(3/2)*Log[Sqrt[d] +
Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int (d\cot(e+fx))^{3/2}\,dx = -\frac{2d\sqrt{d\cot(e+fx)}}{f} - d^2\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= -\frac{2d\sqrt{d\cot(e+fx)}}{f} + \frac{d^3\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\,(d^2+x^2)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{2d\sqrt{d\cot(e+fx)}}{f} + \frac{(2d^3)\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{2d\sqrt{d\cot(e+fx)}}{f} + \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d^2\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,d\right.}{}$$

$$= -\frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} - \frac{d^{3/2}\,\text{Subst}}{}$$

$$= -\frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} + \frac{d^{3/2}\log}{}$$

$$= -\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{2d\sqrt{d\cot(e+fx)}}{f}$$

Mathematica [A] time = 0.19, size = 159, normalized size = 0.76

$$-\frac{(d\cot(e+fx))^{3/2}\left(8\sqrt{\cot(e+fx)}+\sqrt{2}\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\sqrt{2}\log\left(\cot(e+fx)+\sqrt{2}\right.\right.}{4f\cot^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] -1/4*((d*Cot[e + f*x])^(3/2)*(2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x
]]] - 2*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + 8*Sqrt[Cot[e + f*x
```

```
]] + Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]] - Sqrt[2]*L
og[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(f*Cot[e + f*x]^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(3/2), x)
```

maple [A] time = 0.11, size = 176, normalized size = 0.84

$$-\frac{2d\sqrt{d\cot\left(fx+e\right)}}{f}+\frac{d\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f}-\frac{d\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f}+\frac{d\left(d^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(f*x+e))^(3/2),x)
```

```
[Out] -2*d*(d*cot(f*x+e))^(1/2)/f+1/2/f*d*(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2
)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f*d*(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)
/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)+1/4/f*d*(d^2)^(1/4)*2^(1/2)*ln((d*cot(
f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)-
(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))
```

maxima [A] time = 0.52, size = 179, normalized size = 0.85

$$\frac{\left(2\sqrt{2}\sqrt{d}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)+2\sqrt{2}\sqrt{d}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)+\sqrt{2}\sqrt{d}\,\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{}{\mathrm{ta}}}\right.\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*sqrt(d)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d)) + 2*sqrt(2)*sqrt(d)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d)) + sqrt(2)*sqrt(d)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - sqrt(2)*sqrt(d)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 8*sqrt(d/tan(f*x + e)))*
d/f
```

mupad [**B**] time = 2.65, size = 75, normalized size = 0.36

$$-\frac{2\,d\,\sqrt{d\cot\left(e+f\,x\right)}}{f}-\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{f}-\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*cot(e + f*x))^(3/2),x)
```

```
[Out] - (2*d*(d*cot(e + f*x))^(1/2))/f - ((-1)^(1/4)*d^(3/2)*atan(((-1)^(1/4)*(d*
cot(e + f*x))^(1/2))/d^(1/2))*1i)/f - ((-1)^(1/4)*d^(3/2)*atanh(((-1)^(1/4)
*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/f
```

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

$$\int \left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*cot(f*x+e))**(3/2),x)
```

```
[Out] Integral((d*cot(e + f*x))**(3/2), x)
```

3.205 $\int \cot(e+fx)(d\cot(e+fx))^{3/2}\,dx$

Optimal. Leaf size=211

$$\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3}}{}$$

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/f-1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/
2)/d^(1/2))/f*2^(1/2)+1/2*d^(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(
1/2))/f*2^(1/2)+1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*
x+e))^(1/2))/f*2^(1/2)-1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d
*cot(f*x+e))^(1/2))/f*2^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.526$, Rules used = {16, 3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3/2}\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}f}-\frac{d^{3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]*(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] -((d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 - (2*(d*Cot[e + f*x])^(3/2))/(3*f) + (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e
+ f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f) - (d^(3/2)*Log[Sqrt[d
] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \cot(e+fx)(d\cot(e+fx))^{3/2}\,dx = \frac{\int (d\cot(e+fx))^{5/2}\,dx}{d}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3f} - d\int \sqrt{d\cot(e+fx)}\,dx$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3f} + \frac{d^2\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3f} + \frac{(2d^2)\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3f} - \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{d^2\,\text{Subst}}{}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3f} + \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}f} +$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3f} + \frac{d^{3/2}\log\left(\sqrt{d} + \sqrt{d}\cot(e+fx) - \sqrt{2}\sqrt{d\cot(e+fx)}\right.}{2\sqrt{2}f}$$

$$= -\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{2(d\cot(}{}$$

Mathematica [C] time = 0.06, size = 39, normalized size = 0.18

$$\frac{2(d\cot(e+fx))^{3/2}\left({}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)-1\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]*(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (2*(d*Cot[e + f*x])^(3/2)*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x
]^2]))/(3*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \left(d \cot \left(f x + e\right)\right)^{\frac{3}{2}} \cot \left(f x + e\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(3/2)*cot(f*x + e), x)
```

maple [A] time = 0.10, size = 181, normalized size = 0.86

$$-\frac{2\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}{3f}+\frac{d^{2}\sqrt{2}\,\ln\left(\frac{d\cot\left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}{d\cot\left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}\right)}{4f\left(d^{2}\right)^{\frac{1}{4}}}+\frac{d^{2}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\left(d^{2}\right)^{\frac{1}{4}}}-\frac{d^{2}\sqrt{2}\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)*(d*cot(f*x+e))^(3/2),x)
```

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/f+1/4/f*d^2/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)-
(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)^(
1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))+1/2/f*d^2/(d^2)^(1/4)*2^(1/
2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f*d^2/(d^2)^(1/4)
*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.50, size = 184, normalized size = 0.87

$$\frac{3\,d^{2}\left(\frac{2\,\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\,\mathrm{l}\cdots}{}\right.}{12\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/12*(3*d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d)) - 8*(d/tan(f*x +
e))^(3/2))/f
```

mupad [B] time = 2.63, size = 73, normalized size = 0.35

$$\frac{(-1)^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)}{f}-\frac{2\,\left(d\cot\left(e+f\,x\right)\right)^{3/2}}{3\,f}-\frac{(-1)^{1/4}\,d^{3/2}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)*(d*cot(e + f*x))^(3/2),x)
```

```
[Out] ((-1)^(1/4)*d^(3/2)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/f -
(2*(d*cot(e + f*x))^(3/2))/(3*f) - ((-1)^(1/4)*d^(3/2)*atanh(((-1)^(1/4)*(d
*cot(e + f*x))^(1/2))/d^(1/2)))/f
```

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

$$\int\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}\cot\left(e+fx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(d*cot(f*x+e))**(3/2),x)
```

```
[Out] Integral((d*cot(e + f*x))**(3/2)*cot(e + f*x), x)
```

3.206 $\int \cot^2(e+fx)(d\cot(e+fx))^{3/2}\,dx$

Optimal. Leaf size=232

$$\frac{d^{3/2}\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,f}-\frac{d^{3/2}\log\left(\sqrt{d}\,\cot(e+fx)+\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,f}+\cdots$$

```
[Out] -2/5*(d*cot(f*x+e))^(5/2)/d/f+1/2*d^(3/2)*arctan(1-2^(1/2)*(d*cot(f*x+e))^(
1/2)/d^(1/2))/f*2^(1/2)-1/2*d^(3/2)*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d
^(1/2))/f*2^(1/2)+1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(
f*x+e))^(1/2))/f*2^(1/2)-1/4*d^(3/2)*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*
(d*cot(f*x+e))^(1/2))/f*2^(1/2)+2*d*(d*cot(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.20, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{d^{3/2}\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,f}-\frac{d^{3/2}\log\left(\sqrt{d}\,\cot(e+fx)+\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,f}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^2*(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) +
(2*d*Sqrt[d*Cot[e + f*x]])/f - (2*(d*Cot[e + f*x])^(5/2))/(5*d*f) + (d^(3/2
)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]])/(2*Sq
rt[2]*f) - (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot
[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \cot^2(e+fx)(d\cot(e+fx))^{3/2}\,dx = \frac{\int (d\cot(e+fx))^{7/2}\,dx}{d^2}$$

$$= -\frac{2(d\cot(e+fx))^{5/2}}{5df} - \int (d\cot(e+fx))^{3/2}\,dx$$

$$= \frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5df} + d^2\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= \frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5df} - \frac{d^3\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\,\text{c}\right.}{f}$$

$$= \frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5df} - \frac{\left(2d^3\right)\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d}\right.}{f}$$

$$= \frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5df} - \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot}\right.}{f}$$

$$= \frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5df} + \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx,\right.}{2\sqrt{2}f}$$

$$= \frac{2d\sqrt{d\cot(e+fx)}}{f} - \frac{2(d\cot(e+fx))^{5/2}}{5df} + \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)\right.}{2\sqrt{2}f}$$

$$= \frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{2d\sqrt{d\,\text{c}}}{}$$

Mathematica [A] time = 0.27, size = 172, normalized size = 0.74

$$\frac{(d\cot(e+fx))^{3/2}\left(-8\cot^{\frac{5}{2}}(e+fx)+40\sqrt{\cot(e+fx)}+5\sqrt{2}\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-5\sqrt{2}\log\right.}{20f\cot}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^2*(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] ((d*Cot[e + f*x])^(3/2)*(10*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]]
- 10*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + 40*Sqrt[Cot[e + f*x]]
 - 8*Cot[e + f*x]^(5/2) + 5*Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Co
t[e + f*x]] - 5*Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]])
)/(20*f*Cot[e + f*x]^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}\cot\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(3/2)*cot(f*x + e)^2, x)
```

maple [A] time = 0.16, size = 194, normalized size = 0.84

$$-\frac{2\left(d\cot\left(fx+e\right)\right)^{\frac{5}{2}}}{5df}+\frac{2d\sqrt{d\cot\left(fx+e\right)}}{f}-\frac{d\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f}+\frac{d\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d}}{(}\right.}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^2*(d*cot(f*x+e))^(3/2),x)
```

```
[Out] -2/5*(d*cot(f*x+e))^(5/2)/d/f+2*d*(d*cot(f*x+e))^(1/2)/f-1/2/f*d*(d^2)^(1/4
)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)+1/2/f*d*(d^2)^
(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/4/f*d*(
d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2
)+(d^2)^(1/2))/(d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)
^(1/2)))
```

maxima [A] time = 0.51, size = 199, normalized size = 0.86

$$-\frac{10\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+10\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+5\sqrt{2}\,d^{\frac{5}{2}}\log\left(\sqrt{2}\sqrt{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/20*(10*sqrt(2)*d^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/ta
n(f*x + e)))/sqrt(d)) + 10*sqrt(2)*d^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqr
t(d) - 2*sqrt(d/tan(f*x + e)))/sqrt(d)) + 5*sqrt(2)*d^(5/2)*log(sqrt(2)*sqr
t(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 5*sqrt(2)*d^(5/2)*log(-sq
rt(2)*sqrt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 40*d^2*sqrt(d/ta
n(f*x + e)) + 8*(d/tan(f*x + e))^(5/2))/(d*f)
```

mupad [B] time = 2.94, size = 91, normalized size = 0.39

$$\frac{2\,d\,\sqrt{d\cot\left(e+f\,x\right)}}{f}-\frac{2\,{\left(d\cot\left(e+f\,x\right)\right)}^{5/2}}{5\,d\,f}+\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)\,1\mathrm{i}}{f}+\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d}}{}\right.}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^2*(d*cot(e + f*x))^(3/2),x)
```

```
[Out] (2*d*(d*cot(e + f*x))^(1/2))/f - (2*(d*cot(e + f*x))^(5/2))/(5*d*f) + ((-1)
^(1/4)*d^(3/2)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/f + ((
-1)^(1/4)*d^(3/2)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2)*1i)/d^(1/2)))/f
```

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

$$\int \left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}\cot^{2}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**2*(d*cot(f*x+e))**(3/2),x)

[Out] Integral((d*cot(e + f*x))**(3/2)*cot(e + f*x)**2, x)
```

3.207 $\int \frac{\tan^3(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx$

Optimal. Leaf size=231

$$\frac{2d^2}{5f(d\cot(e+fx))^{5/2}}-\frac{2}{f\sqrt{d\cot(e+fx)}}-\frac{\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,\sqrt{d}\,f}+\frac{\log\left(\sqrt{d}\,\cot(e+fx\right.}{}$$

```
[Out] 2/5*d^2/f/(d*cot(f*x+e))^(5/2)+1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^
(1/2))/f*2^(1/2)/d^(1/2)-1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))
/f*2^(1/2)/d^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))
^(1/2))/f*2^(1/2)/d^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(
f*x+e))^(1/2))/f*2^(1/2)/d^(1/2)-2/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2d^2}{5f(d\cot(e+fx))^{5/2}}-\frac{2}{f\sqrt{d\cot(e+fx)}}-\frac{\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,\sqrt{d}\,f}+\frac{\log\left(\sqrt{d}\,\cot(e+fx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]^3/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) + (2*d
^2)/(5*f*(d*Cot[e + f*x])^(5/2)) - 2/(f*Sqrt[d*Cot[e + f*x]]) - Log[Sqrt[d]
 + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*
f) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*
Sqrt[2]*Sqrt[d]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
```

```
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\tan^3(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx = d^3\int \frac{1}{(d\cot(e+fx))^{7/2}}\,dx$$

$$= \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - d\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$$

$$= \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{f\sqrt{d\cot(e+fx)}} + \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d}$$

$$= \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{f\sqrt{d\cot(e+fx)}} - \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{f\sqrt{d\cot(e+fx)}} - \frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{f\sqrt{d\cot(e+fx)}} + \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} - \text{Su}$$

$$= \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{f\sqrt{d\cot(e+fx)}} - \frac{\text{Subst}\left(\int \frac{1}{d-\sqrt{2}\sqrt{d}x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f}$$

$$= \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{f\sqrt{d\cot(e+fx)}} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+}\right.}{2\sqrt{2}\sqrt{d}f}$$

$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}f} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}f} + \frac{2d^2}{5f(d\cot(e+fx))^{5/2}} - \frac{}{f\sqrt{d\,\text{c}}}$$

Mathematica [C] time = 0.11, size = 40, normalized size = 0.17

$$\frac{2d^2\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\cot^2(e+fx)\right)}{5f(d\cot(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]^3/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (2*d^2*Hypergeometric2F1[-5/4, 1, -1/4, -Cot[e + f*x]^2])/(5*f*(d*Cot[e + f
*x])^(5/2))
```

fricas [B] time = 0.55, size = 595, normalized size = 2.58

$$\frac{20\sqrt{2}\,df\left(\frac{1}{d^2f^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,f\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^2f^4}\right)^{\frac{1}{4}}+\sqrt{2}\,f\sqrt{\frac{\sqrt{2}\,d^2f^3\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^2f^4}\right)^{\frac{3}{4}}\sin\left(fx+e\right)+d^2f^2\sqrt{\frac{1}{d^2f^4}}\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^3/(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/20*(20*sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*arctan(-sqrt(2)*f*sqrt(d*cos(f*x +
 e)/sin(f*x + e))*(1/(d^2*f^4))^(1/4) + sqrt(2)*f*sqrt((sqrt(2)*d^2*f^3*sqr
t(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(3/4)*sin(f*x + e) + d^2*f^2*s
qrt(1/(d^2*f^4))*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e))*(1/(d^2*f^4))
^(1/4) - 1)*cos(f*x + e)^3 + 20*sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*arctan(-sqr
t(2)*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(1/4) + sqrt(2)*f*sq
rt(-(sqrt(2)*d^2*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(3/4)*
sin(f*x + e) - d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x + e) - d*cos(f*x + e))/sin
(f*x + e))*(1/(d^2*f^4))^(1/4) + 1)*cos(f*x + e)^3 + 5*sqrt(2)*d*f*(1/(d^2*
f^4))^(1/4)*cos(f*x + e)^3*log((sqrt(2)*d^2*f^3*sqrt(d*cos(f*x + e)/sin(f*x
 + e))*(1/(d^2*f^4))^(3/4)*sin(f*x + e) + d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x
 + e) + d*cos(f*x + e))/sin(f*x + e)) - 5*sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*c
os(f*x + e)^3*log(-(sqrt(2)*d^2*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d
^2*f^4))^(3/4)*sin(f*x + e) - d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x + e) - d*co
s(f*x + e))/sin(f*x + e)) - 8*(6*cos(f*x + e)^2 - 1)*sqrt(d*cos(f*x + e)/si
n(f*x + e))*sin(f*x + e))/(d*f*cos(f*x + e)^3)
```

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

$$\int\frac{\tan\left(fx+e\right)^3}{\sqrt{d\cot\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^3/(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^3/sqrt(d*cot(f*x + e)), x)
```

maple [C] time = 0.70, size = 728, normalized size = 3.15

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(5i\left(\cos^{2}\left(fx+e\right)\right)\sin\left(fx+e\right)\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(}{\sin(fx}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^3/(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -1/10/f*(-1+cos(f*x+e))*(5*I*cos(f*x+e)^2*sin(f*x+e)*EllipticPi((-(-sin(f*x
+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))
/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*
x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-5*I*cos(f*x+e)^2*sin(f*x+e)*EllipticPi
((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1
+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2
)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+5*cos(f*x+e)^2*sin(f*x+e)*
EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(
1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*
x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+5*cos(f*x+e)^2*s
in(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2
*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+
e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-10*cos
(f*x+e)^2*sin(f*x+e)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/
2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+
e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+12*cos
(f*x+e)^3*2^(1/2)-12*cos(f*x+e)^2*2^(1/2)-2*cos(f*x+e)*2^(1/2)+2*2^(1/2))*(
1+cos(f*x+e))^2/sin(f*x+e)^4/cos(f*x+e)^2/(d*cos(f*x+e)/sin(f*x+e))^(1/2)*2
^(1/2)
```

maxima [A] time = 0.48, size = 207, normalized size = 0.90

$$-\frac{d^4\left(\frac{5\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\cdots}\right.}{\cdots}\right.}{d^4}\right.}{20f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^3/(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/20*d^4*(5*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(
f*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*
sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*s
qrt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^4 - 8*(d^2 - 5
*d^2/tan(f*x + e)^2)/(d^4*(d/tan(f*x + e))^(5/2)))/f
```

mupad [B] time = 2.57, size = 97, normalized size = 0.42

$$\frac{\frac{2d^2}{5}-\frac{2d^2}{\tan(e+fx)^2}}{f\left(\frac{d}{\tan(e+fx)}\right)^{5/2}}-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{\sqrt{d}\,f}+\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{\sqrt{d}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^3/(d*cot(e + f*x))^(1/2),x)
```

```
[Out] ((2*d^2)/5 - (2*d^2)/tan(e + f*x)^2)/(f*(d/tan(e + f*x))^(5/2)) - ((-1)^(1/
4)*atan(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/(d^(1/2)*f) + ((-1)^(
1/4)*atanh(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/(d^(1/2)*f)
```

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

$$\int \frac{\tan^3(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**3/(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(tan(e + f*x)**3/sqrt(d*cot(e + f*x)), x)
```

3.208 $\int \frac{\tan^2(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx$

Optimal. Leaf size=212

$$\frac{2d}{3f(d\cot(e+fx))^{3/2}}-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+f\right.}}{2\sqrt{2}\sqrt{d}f}$$

```
[Out] 2/3*d/f/(d*cot(f*x+e))^(3/2)-1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1
/2))/f*2^(1/2)/d^(1/2)+1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f
*2^(1/2)/d^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(
1/2))/f*2^(1/2)/d^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*
x+e))^(1/2))/f*2^(1/2)/d^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{2d}{3f(d\cot(e+fx))^{3/2}}-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+f\right.}}{2\sqrt{2}\sqrt{d}f}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]^2/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) + (
2*d)/(3*f*(d*Cot[e + f*x])^(3/2)) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sq
rt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f) + Log[Sqrt[d] + Sqrt[d]*C
ot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\tan^2(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx = d^2\int \frac{1}{(d\cot(e+fx))^{5/2}}\,dx$$

$$= \frac{2d}{3f(d\cot(e+fx))^{3/2}} - \int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= \frac{2d}{3f(d\cot(e+fx))^{3/2}} + \frac{d\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2d}{3f(d\cot(e+fx))^{3/2}} + \frac{(2d)\,\mathrm{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2d}{3f(d\cot(e+fx))^{3/2}} + \frac{\mathrm{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{\mathrm{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\right.}{f}$$

$$= \frac{2d}{3f(d\cot(e+fx))^{3/2}} + \frac{\mathrm{Subst}\left(\int \frac{1}{d-\sqrt{2}\sqrt{d}\,x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f} + \frac{\mathrm{Subst}\left(\int \frac{1}{d+\sqrt{2}\sqrt{d}\right.}{}$$

$$= \frac{2d}{3f(d\cot(e+fx))^{3/2}} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\sqrt{d}\,f} + \frac{\log\left(\sqrt{d}+\right.}{}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}\,f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}\,f} + \frac{2d}{3f(d\cot(e+fx))^{3/2}} - \frac{\log\left(\right.}{}$$

Mathematica [C] time = 0.09, size = 38, normalized size = 0.18

$$\frac{2d\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\cot^2(e+fx)\right)}{3f(d\cot(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]^2/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (2*d*Hypergeometric2F1[-3/4, 1, 1/4, -Cot[e + f*x]^2])/(3*f*(d*Cot[e + f*x]
)^(3/2))
```

fricas [B] time = 0.53, size = 579, normalized size = 2.73

$$-\frac{12\sqrt{2}\,df\left(\frac{1}{d^2f^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,df^3\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\left(\frac{1}{d^2f^4}\right)^{\frac{3}{4}}+\sqrt{2}\,df^3\sqrt{\frac{d^2f^2\sqrt{\frac{1}{d^2f^4}}\sin(fx+e)+\sqrt{2}\,df\sqrt{\frac{d\cos(fx+e)}{\sin(fx+e)}}\left(\frac{1}{d^2f^4}\right)^{\frac{1}{4}}\sin(fx+e)}{\sin(fx+e)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] -1/12*(12*sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*arctan(-sqrt(2)*d*f^3*sqrt(d*cos(
f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(3/4) + sqrt(2)*d*f^3*sqrt((d^2*f^2*sq
rt(1/(d^2*f^4))*sin(f*x + e) + sqrt(2)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e)
)*(1/(d^2*f^4))^(1/4)*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e))*(1/(d^2*
f^4))^(3/4) - 1)*cos(f*x + e)^2 + 12*sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*arctan
(-sqrt(2)*d*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(3/4) + sqr
t(2)*d*f^3*sqrt((d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x + e) - sqrt(2)*d*f*sqrt(
d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(1/4)*sin(f*x + e) + d*cos(f*x +
 e))/sin(f*x + e))*(1/(d^2*f^4))^(3/4) + 1)*cos(f*x + e)^2 - 3*sqrt(2)*d*f*
(1/(d^2*f^4))^(1/4)*cos(f*x + e)^2*log((d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x +
 e) + sqrt(2)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(1/4)*sin
(f*x + e) + d*cos(f*x + e))/sin(f*x + e)) + 3*sqrt(2)*d*f*(1/(d^2*f^4))^(1/
4)*cos(f*x + e)^2*log((d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x + e) - sqrt(2)*d*f
*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(1/4)*sin(f*x + e) + d*cos
(f*x + e))/sin(f*x + e)) + 8*(cos(f*x + e)^2 - 1)*sqrt(d*cos(f*x + e)/sin(f
*x + e)))/(d*f*cos(f*x + e)^2)
```

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

$$\int \frac{\tan\left(fx+e\right)^2}{\sqrt{d\cot\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^2/sqrt(d*cot(f*x + e)), x)
```

maple [C]   time = 0.64, size = 548, normalized size = 2.58

$$\frac{\left(1+\cos\left(fx+e\right)\right)^{2}\left(-1+\cos\left(fx+e\right)\right)\left(3i\cos\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos}{\sin\left(fx+e\right)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^2/(d*cot(f*x+e))^(1/2),x)
```

```
[Out] 1/6/f*(1+cos(f*x+e))^2*(-1+cos(f*x+e))*(3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin
(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)
-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/si
n(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin(
f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-
1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin
(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x
+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+c
os(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*
x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e)
)^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(
f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e
))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))/sin(f*x+e)^
3/(d*cos(f*x+e)/sin(f*x+e))^(1/2)/cos(f*x+e)*2^(1/2)
```

maxima [A]   time = 0.77, size = 190, normalized size = 0.90

$$\frac{d^{3}\left(\frac{3\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\frac{}{\tan}}\right.}{}\right.}{d^{2}}\right.}{12\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/12*d^3*(3*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/d^2 + 8/(d^2*(d/t
an(f*x + e))^(3/2)))/f
```

mupad [**B**] time = 2.51, size = 81, normalized size = 0.38

$$\frac{2\,d}{3\,f\left(\frac{d}{\tan\left(e+f\,x\right)}\right)^{3/2}}-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)\,1\mathrm{i}}{\sqrt{d}\,f}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)\,1\mathrm{i}}{\sqrt{d}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2/(d*cot(e + f*x))^(1/2),x)
```

```
[Out] (2*d)/(3*f*(d/tan(e + f*x))^(3/2)) - ((-1)^(1/4)*atan(((-1)^(1/4)*(d/tan(e
+ f*x))^(1/2))/d^(1/2))*1i)/(d^(1/2)*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(d/
tan(e + f*x))^(1/2))/d^(1/2))*1i)/(d^(1/2)*f)
```

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

$$\int \frac{\tan^2\left(e+fx\right)}{\sqrt{d\cot\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**2/(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(tan(e + f*x)**2/sqrt(d*cot(e + f*x)), x)
```

3.209 $\int \frac{\tan(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx$

Optimal. Leaf size=209

$$\frac{2}{f\sqrt{d\cot(e+fx)}}+\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}\right.}{2\sqrt{2}\sqrt{d}f}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)+1/2*a
rctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)+1/4*ln(d^(1
/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/2)-1/4*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/
2)+2/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {16, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{2}{f\sqrt{d\cot(e+fx)}}+\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}\right.}{2\sqrt{2}\sqrt{d}f}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) + 2
/(f*Sqrt[d*Cot[e + f*x]]) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sq
rt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f
*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\tan(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx = d\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$$

$$= \frac{2}{f\sqrt{d\cot(e+fx)}} - \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d}$$

$$= \frac{2}{f\sqrt{d\cot(e+fx)}} + \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2}{f\sqrt{d\cot(e+fx)}} + \frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2}{f\sqrt{d\cot(e+fx)}} - \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\,\text{co}\right.}{f}$$

$$= \frac{2}{f\sqrt{d\cot(e+fx)}} + \frac{\text{Subst}\left(\int \frac{1}{d-\sqrt{2}\,\sqrt{d}\,x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f} + \frac{\text{Subst}\left(\int \frac{1}{d+\sqrt{2}\,\sqrt{d}\,x+x}\right.}{}$$

$$= \frac{2}{f\sqrt{d\cot(e+fx)}} + \frac{\log\left(\sqrt{d}+\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\,\sqrt{d}\,f} - \frac{\log\left(\sqrt{d}+\sqrt{d}\,\text{c}\right.}{}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,\sqrt{d}\,f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,\sqrt{d}\,f} + \frac{2}{f\sqrt{d\cot(e+fx)}} + \frac{\log\left(\sqrt{d}\right.}{}$$

Mathematica [C] time = 0.07, size = 35, normalized size = 0.17

$$\frac{2\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\cot^2(e+fx)\right)}{f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (2*Hypergeometric2F1[-1/4, 1, 3/4, -Cot[e + f*x]^2])/(f*Sqrt[d*Cot[e + f*x]
])
```

fricas [B] time = 0.56, size = 574, normalized size = 2.75

$$-\frac{4\sqrt{2}\,df\left(\frac{1}{d^2f^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,f\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^2f^4}\right)^{\frac{1}{4}}+\sqrt{2}\,f\sqrt{\frac{\sqrt{2}\,d^2f^3\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^2f^4}\right)^{\frac{3}{4}}\sin\left(fx+e\right)+d^2f^2\sqrt{\frac{1}{d^2f^4}}\sin\left(fx\cdots\right.}{\sin\left(fx+e\right)}}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4*(4*sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*arctan(-sqrt(2)*f*sqrt(d*cos(f*x +
e)/sin(f*x + e))*(1/(d^2*f^4))^(1/4) + sqrt(2)*f*sqrt((sqrt(2)*d^2*f^3*sqrt
(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(3/4)*sin(f*x + e) + d^2*f^2*sq
rt(1/(d^2*f^4))*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e))*(1/(d^2*f^4))^
(1/4) - 1)*cos(f*x + e) + 4*sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*arctan(-sqrt(2)
*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(1/4) + sqrt(2)*f*sqrt(-
(sqrt(2)*d^2*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(3/4)*sin(
f*x + e) - d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x + e) - d*cos(f*x + e))/sin(f*x
 + e))*(1/(d^2*f^4))^(1/4) + 1)*cos(f*x + e) + sqrt(2)*d*f*(1/(d^2*f^4))^(1
/4)*cos(f*x + e)*log((sqrt(2)*d^2*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/
(d^2*f^4))^(3/4)*sin(f*x + e) + d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x + e) + d*
cos(f*x + e))/sin(f*x + e)) - sqrt(2)*d*f*(1/(d^2*f^4))^(1/4)*cos(f*x + e)*
log(-(sqrt(2)*d^2*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^2*f^4))^(3/4)
*sin(f*x + e) - d^2*f^2*sqrt(1/(d^2*f^4))*sin(f*x + e) - d*cos(f*x + e))/si
n(f*x + e)) - 8*sqrt(d*cos(f*x + e)/sin(f*x + e))*sin(f*x + e))/(d*f*cos(f*
x + e))
```

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

$$\int \frac{\tan\left(fx+e\right)}{\sqrt{d\cot\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)/sqrt(d*cot(f*x + e)), x)
```

maple [C] time = 0.63, size = 652, normalized size = 3.12

$$\left(1+\cos\left(fx+e\right)\right)^{2}\left(-1+\cos\left(fx+e\right)\right)\left(i\sin\left(fx+e\right)\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(\ldots}{\sin(fx\ldots}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)/(d*cot(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(1+cos(f*x+e))^2*(-1+cos(f*x+e))*(I*sin(f*x+e)*EllipticPi((-(-sin(f*x
+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))
/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*
x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-I*sin(f*x+e)*EllipticPi((-(-sin(f*x+e)
-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/si
n(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e
)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+sin(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+co
s(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x
+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+c
os(f*x+e))/sin(f*x+e))^(1/2)+sin(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x
+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^
(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*
x+e))/sin(f*x+e))^(1/2)-2*sin(f*x+e)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))
/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos
(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+
e))^(1/2)+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))/sin(f*x+e)^4/(d*cos(f*x+e)/sin(f*
x+e))^(1/2)*2^(1/2)
```

maxima [A] time = 0.91, size = 189, normalized size = 0.90

$$\frac{d^{2}\left(\frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(f\ldots}}\ldots\right)}{\sqrt{d}}}{d^{2}}\ldots\right)}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*d^2*((2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x
+ e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt
(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(
d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^2 + 8/(d^2*sqrt(d/
tan(f*x + e))))/f
```

mupad [B] time = 0.19, size = 79, normalized size = 0.38

$$\frac{2}{f\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}+\frac{{\left(-1\right)}^{1/4}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)}{\sqrt{d}\,f}-\frac{{\left(-1\right)}^{1/4}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)}{\sqrt{d}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)/(d*cot(e + f*x))^(1/2),x)
```

```
[Out] 2/(f*(d/tan(e + f*x))^(1/2)) + ((-1)^(1/4)*atan(((-1)^(1/4)*(d/tan(e + f*x)
)^(1/2))/d^(1/2)))/(d^(1/2)*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(d/tan(e + f
*x))^(1/2))/d^(1/2)))/(d^(1/2)*f)
```

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

$$\int \frac{\tan\left(e + f x\right)}{\sqrt{d \cot\left(e + f x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(tan(e + f*x)/sqrt(d*cot(e + f*x)), x)
```

3.210 $\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$

Optimal. Leaf size=192

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}+\frac{\tan^{-1}\left(1-\right.}{\sqrt{}}$$

```
[Out] 1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)-1/2*ar
ctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)+1/4*ln(d^(1/
2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/2)-1/4*l
n(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/2
)
```

Rubi [A] time = 0.11, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}+\frac{\tan^{-1}\left(1-\right.}{\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) + Log[
Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*S
qrt[d]*f) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x
]]]/(2*Sqrt[2]*Sqrt[d]*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx = -\frac{d\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{(2d)\,\mathrm{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{\mathrm{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} - \frac{\mathrm{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{\mathrm{Subst}\left(\int \frac{1}{d-\sqrt{2}\sqrt{d}x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f} - \frac{\mathrm{Subst}\left(\int \frac{1}{d+\sqrt{2}\sqrt{d}x+x^2}\,dx, x, \sqrt{d\cot(e+\right.}{2f}$$

$$= \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\sqrt{d}f} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\right.}{2\sqrt{2}\sqrt{d}f}$$

$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}f} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\right.}{2\sqrt{2}\sqrt{d}f}$$

Mathematica [A] time = 0.01, size = 131, normalized size = 0.68

$$\frac{\sqrt{\cot(e+fx)}\left(\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\log\left(\cot(e+fx)+\sqrt{2}\sqrt{\cot(e+fx)}+1\right)+2\tan^{-1}\left(1\right.\right.}{2\sqrt{2}f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (Sqrt[Cot[e + f*x]]*(2*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]] - 2*ArcTan[1
+ Sqrt[2]*Sqrt[Cot[e + f*x]]] + Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e
+ f*x]] - Log[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(2*Sqrt[2]*f
*Sqrt[d*Cot[e + f*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{1}{\sqrt{d \cot \left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/sqrt(d*cot(f*x + e)), x)
```

maple [A] time = 0.12, size = 166, normalized size = 0.86

$$-\frac{\left(d^{2}\right)^{\frac{1}{4}} \sqrt{2}\, \ln \left(\frac{d \cot \left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}} \sqrt{d \cot \left(fx+e\right)}\, \sqrt{2}+\sqrt{d^{2}}}{d \cot \left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}} \sqrt{d \cot \left(fx+e\right)}\, \sqrt{2}+\sqrt{d^{2}}}\right)}{4fd}-\frac{\left(d^{2}\right)^{\frac{1}{4}} \sqrt{2}\, \arctan \left(\frac{\sqrt{2}\, \sqrt{d \cot \left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2fd}+\frac{\left(d^{2}\right)^{\frac{1}{4}} \sqrt{2}\, \arctan \left(\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -1/4/f/d*(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1
/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(
1/2)+(d^2)^(1/2)))-1/2/f/d*(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(
d*cot(f*x+e))^(1/2)+1)+1/2/f/d*(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1
/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.43, size = 165, normalized size = 0.86

$$-\frac{d\left(\frac{2\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\,\log\left(\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\,\mathrm{l}}{}\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/4*d*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x +
e)))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*
sqrt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt(d
/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sqrt(d)
*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/f
```

mupad [B] time = 2.65, size = 57, normalized size = 0.30

$$\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)1\mathrm{i}}{\sqrt{d}\,f}+\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)1\mathrm{i}}{\sqrt{d}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*cot(e + f*x))^(1/2),x)
```

```
[Out] ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/(d^(1/2)*
f) + ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/(d^
(1/2)*f)
```

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

$$\int \frac{1}{\sqrt{d\cot\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/sqrt(d*cot(e + f*x)), x)
```

3.211 $\int \frac{\cot(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx$

Optimal. Leaf size=192

$$-\frac{\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,\sqrt{d}\,f}+\frac{\log\left(\sqrt{d}\,\cot(e+fx)+\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,\sqrt{d}\,f}+\frac{\tan^{-1}\left(\right.}{}$$

```
[Out] 1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)-1/2*ar
ctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)-1/4*ln(d^(1/
2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/2)+1/4*l
n(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/2
)
```

Rubi [A] time = 0.13, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.474, Rules used = {16, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,\sqrt{d}\,f}+\frac{\log\left(\sqrt{d}\,\cot(e+fx)+\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,\sqrt{d}\,f}+\frac{\tan^{-1}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) - Log[
Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*S
qrt[d]*f) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x
]]]/(2*Sqrt[2]*Sqrt[d]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

IntegerQ[n]

Rubi steps

$$
\begin{aligned}
\int \frac{\cot(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx &= \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d} \\
&= -\frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f} \\
&= -\frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} \\
&= \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} - \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} \\
&= -\frac{\text{Subst}\left(\int \frac{1}{d-\sqrt{2}\sqrt{d}\,x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f} - \frac{\text{Subst}\left(\int \frac{1}{d+\sqrt{2}\sqrt{d}\,x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f} \\
&= -\frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\sqrt{d}\,f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)+\sqrt{2}\right.}{2\sqrt{2}\sqrt{d}\,f} \\
&= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}\,f} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}\,f} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\right.}{2\sqrt{2}\sqrt{d}}
\end{aligned}
$$

Mathematica [C] time = 0.04, size = 40, normalized size = 0.21

$$
-\frac{2(d\cot(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)}{3d^2f}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (-2*(d*Cot[e + f*x])^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x]^2])
/(3*d^2*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{\cot\left(fx+e\right)}{\sqrt{d\cot\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(cot(f*x + e)/sqrt(d*cot(f*x + e)), x)
```

maple [A] time = 0.13, size = 157, normalized size = 0.82

$$-\frac{\sqrt{2}\,\ln\left(\frac{d\cot\left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}{d\cot\left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}\right)}{4f\left(d^{2}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\left(d^{2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\left(d^{2}\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)/(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -1/4/f/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2
)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/
2)+(d^2)^(1/2)))-1/2/f/(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*co
t(f*x+e))^(1/2)+1)+1/2/f/(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d
*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.67, size = 164, normalized size = 0.85

$$-\frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\right.}{}}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x + e)
))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*sq
rt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt(d/t
an(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/f
```

mupad [B] time = 2.51, size = 58, normalized size = 0.30

$$\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)}{\sqrt{d}\,f}-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)}{\sqrt{d}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)/(d*cot(e + f*x))^(1/2),x)
```

```
[Out] ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/(d^(1/2)*f)
 - ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/(d^(1/2)*
f)
```

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

$$\int \frac{\cot\left(e+fx\right)}{\sqrt{d\cot\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(cot(e + f*x)/sqrt(d*cot(e + f*x)), x)
```

3.212 $\int \frac{\cot^2(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx$

Optimal. Leaf size=212

$$-\frac{2\sqrt{d\cot(e+fx)}}{df}-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}\right.}{2\sqrt{2}\sqrt{d}f}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)+1/2*a
rctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)/d^(1/2)-1/4*ln(d^(1
/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/2)+1/4*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/f*2^(1/2)/d^(1/
2)-2*(d*cot(f*x+e))^(1/2)/d/f
```

Rubi [A] time = 0.16, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{2\sqrt{d\cot(e+fx)}}{df}-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}\right.}{2\sqrt{2}\sqrt{d}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^2/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) - (
2*Sqrt[d*Cot[e + f*x]])/(d*f) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2
]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f) + Log[Sqrt[d] + Sqrt[d]*Cot[e
 + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\cot^2(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx = \frac{\int (d\cot(e+fx))^{3/2}\,dx}{d^2}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{df} - \int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{df} + \frac{d\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{df} + \frac{(2d)\,\mathrm{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{df} + \frac{\mathrm{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{\mathrm{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\,\mathrm{c}}\right.}{f}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{df} + \frac{\mathrm{Subst}\left(\int \frac{1}{d-\sqrt{2}\sqrt{d}\,x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f} + \frac{\mathrm{Subst}\left(\int \frac{1}{d+\sqrt{2}\sqrt{d}\,x+}\right.}{}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{df} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\sqrt{d}\,f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\right.}{}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}\,f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\sqrt{d}\,f} - \frac{2\sqrt{d\cot(e+fx)}}{df} - \frac{\log\left(\sqrt{d}\right.}{}$$

Mathematica [A] time = 0.17, size = 159, normalized size = 0.75

$$-\frac{\sqrt{\cot(e+fx)}\left(8\sqrt{\cot(e+fx)}+\sqrt{2}\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\sqrt{2}\log\left(\cot(e+fx)+\sqrt{2}\sqrt{\mathrm{co}}\right.\right.}{4f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^2/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -1/4*(Sqrt[Cot[e + f*x]]*(2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]]
- 2*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + 8*Sqrt[Cot[e + f*x]] +
 Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]] - Sqrt[2]*Log[1
 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(f*Sqrt[d*Cot[e + f*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2/(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{\cot\left(fx+e\right)^{2}}{\sqrt{d\cot\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2/(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(cot(f*x + e)^2/sqrt(d*cot(f*x + e)), x)
```

maple [A] time = 0.18, size = 184, normalized size = 0.87

$$-\frac{2\sqrt{d\cot\left(fx+e\right)}}{df}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2fd}-\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2fd}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^2/(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -2*(d*cot(f*x+e))^(1/2)/d/f+1/2/f/d*(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2
)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f/d*(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)
/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)+1/4/f/d*(d^2)^(1/4)*2^(1/2)*ln((d*cot(
```

```
f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)-
(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))
```

maxima [A] time = 0.66, size = 181, normalized size = 0.85

$$\frac{2\sqrt{2}\sqrt{d}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+2\sqrt{2}\sqrt{d}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+\sqrt{2}\sqrt{d}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{}{\tan}}\right.}{4df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2/(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*sqrt(d)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d)) + 2*sqrt(2)*sqrt(d)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d)) + sqrt(2)*sqrt(d)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - sqrt(2)*sqrt(d)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 8*sqrt(d/tan(f*x + e)))/
(d*f)
```

mupad [B] time = 2.66, size = 77, normalized size = 0.36

$$-\frac{2\sqrt{d\cot\left(e+fx\right)}}{df}-\frac{(-1)^{1/4}\operatorname{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(e+fx\right)}}{\sqrt{d}}\right)1\mathrm{i}}{\sqrt{d}\,f}-\frac{(-1)^{1/4}\operatorname{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(e+fx\right)}}{\sqrt{d}}\right)1\mathrm{i}}{\sqrt{d}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^2/(d*cot(e + f*x))^(1/2),x)
```

```
[Out] - (2*(d*cot(e + f*x))^(1/2))/(d*f) - ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e
+ f*x))^(1/2))/d^(1/2))*1i)/(d^(1/2)*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*
cot(e + f*x))^(1/2))/d^(1/2))*1i)/(d^(1/2)*f)
```

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

$$\int\frac{\cot^2\left(e+fx\right)}{\sqrt{d\cot\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**2/(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(cot(e + f*x)**2/sqrt(d*cot(e + f*x)), x)
```

3.213 $\int \frac{\cot^3(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx$

Optimal. Leaf size=214

$$-\frac{2(d\cot(e+fx))^{3/2}}{3d^2f}+\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+\right.}{2\sqrt{2}\sqrt{d}f}$$

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/d^2/f-1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d
^(1/2))/f*2^(1/2)/d^(1/2)+1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2)
)/f*2^(1/2)/d^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e)
)^(1/2))/f*2^(1/2)/d^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot
(f*x+e))^(1/2))/f*2^(1/2)/d^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {16, 3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{2(d\cot(e+fx))^{3/2}}{3d^2f}+\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\sqrt{d}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+\right.}{2\sqrt{2}\sqrt{d}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^3/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*Sqrt[d]*f) - (
2*(d*Cot[e + f*x])^(3/2))/(3*d^2*f) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] -
Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f) - Log[Sqrt[d] + Sqrt[d]
*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*Sqrt[d]*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\cot^3(e+fx)}{\sqrt{d\cot(e+fx)}}\,dx = \frac{\int (d\cot(e+fx))^{5/2}\,dx}{d^3}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^2f} - \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^2f} + \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^2f} + \frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^2f} - \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f} + \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{\right.}}{f}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^2f} + \frac{\text{Subst}\left(\int \frac{1}{d-\sqrt{2}\,\sqrt{d}\,x+x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2f} + \frac{\text{Subst}\left(\int \frac{1}{d+\sqrt{2}\,\sqrt{}}\right.}{}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^2f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\,\sqrt{d}\,f} - \frac{\log\left(\sqrt{d}+\right.}{}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,\sqrt{d}\,f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,\sqrt{d}\,f} - \frac{2(d\cot(e+fx))^{3/2}}{3d^2f} + \frac{\log\left(\right.}{}$$

Mathematica [C] time = 0.06, size = 47, normalized size = 0.22

$$\frac{2\cot^2(e+fx)\left({}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)-1\right)}{3f\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^3/Sqrt[d*Cot[e + f*x]],x]
```

```
[Out] (2*Cot[e + f*x]^2*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x]^2]))/(
3*f*Sqrt[d*Cot[e + f*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3/(d*cot(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{\cot\left(fx+e\right)^{3}}{\sqrt{d\cot\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3/(d*cot(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(cot(f*x + e)^3/sqrt(d*cot(f*x + e)), x)
```

maple [A] time = 0.19, size = 175, normalized size = 0.82

$$-\frac{2\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}{3d^{2}f}+\frac{\sqrt{2}\,\ln\left(\frac{d\cot\left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}{d\cot\left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}\right)}{4f\left(d^{2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\left(d^{2}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\,\arctan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^3/(d*cot(f*x+e))^(1/2),x)
```

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/d^2/f+1/4/f/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)-
(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)^(
1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))+1/2/f/(d^2)^(1/4)*2^(1/2)*a
rctan(2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f/(d^2)^(1/4)*2^(1/2)
*arctan(-2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.81, size = 187, normalized size = 0.87

$$\frac{3\,d^2\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\cdots\right.}{12\,d^2 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3/(d*cot(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/12*(3*d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d)) - 8*(d/tan(f*x +
e))^(3/2))/(d^2*f)
```

mupad [B] time = 2.67, size = 76, normalized size = 0.36

$$\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{\sqrt{d}\,f}-\frac{2\,\left(d\cot\left(e+f\,x\right)\right)^{3/2}}{3\,d^2\,f}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{\sqrt{d}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^3/(d*cot(e + f*x))^(1/2),x)
```

```
[Out] ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/(d^(1/2)*f)
- (2*(d*cot(e + f*x))^(3/2))/(3*d^2*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*c
ot(e + f*x))^(1/2))/d^(1/2)))/(d^(1/2)*f)
```

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

$$\int \frac{\cot^3\left(e+fx\right)}{\sqrt{d\cot\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**3/(d*cot(f*x+e))**(1/2),x)
```

```
[Out] Integral(cot(e + f*x)**3/sqrt(d*cot(e + f*x)), x)
```

3.214 $\int \frac{\tan^2(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=232

$$-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\tan^{-1}\Big(1}{}$$

```
[Out] 2/5*d/f/(d*cot(f*x+e))^(5/2)+1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1
/2))/d^(3/2)/f*2^(1/2)-1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d
^(3/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(
1/2))/d^(3/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*
x+e))^(1/2))/d^(3/2)/f*2^(1/2)-2/d/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\tan^{-1}\Big(1}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]^2/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) + (2*d
)/(5*f*(d*Cot[e + f*x])^(5/2)) - 2/(d*f*Sqrt[d*Cot[e + f*x]]) - Log[Sqrt[d]
 + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*
f) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*
Sqrt[2]*d^(3/2)*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
```

```
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\tan^2(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx = d^2\int \frac{1}{(d\cot(e+fx))^{7/2}}\,dx$$

$$= \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$$

$$= \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{df\sqrt{d\cot(e+fx)}} + \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d^2}$$

$$= \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{df\sqrt{d\cot(e+fx)}} - \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{df}$$

$$= \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{df\sqrt{d\cot(e+fx)}} - \frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df}$$

$$= \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{df\sqrt{d\cot(e+fx)}} + \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} - \text{S}$$

$$= \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{df\sqrt{d\cot(e+fx)}} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+f}\right.}{2\sqrt{2}\,d^{3/2}f}$$

$$= \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \frac{2}{df\sqrt{d\cot(e+fx)}} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e}\right.}{2\sqrt{2}\,d^{3/2}f}$$

$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} + \frac{2d}{5f(d\cot(e+fx))^{5/2}} - \frac{}{df\sqrt{d}}$$

Mathematica [C] time = 0.17, size = 38, normalized size = 0.16

$$\frac{2d\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\cot^2(e+fx)\right)}{5f(d\cot(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]^2/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (2*d*Hypergeometric2F1[-5/4, 1, -1/4, -Cot[e + f*x]^2])/(5*f*(d*Cot[e + f*x
])^(5/2))
```

fricas [B] time = 0.56, size = 607, normalized size = 2.62

$$20\sqrt{2}\,d^2f\left(\frac{1}{d^6f^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,df\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^6f^4}\right)^{\frac{1}{4}}+\sqrt{2}\,df\sqrt{\frac{\sqrt{2}\,d^5f^3\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^6f^4}\right)^{\frac{3}{4}}\sin\left(fx+e\right)+d^4f^2\sqrt{\frac{1}{d^6f^4}}\sin}{\sin\left(fx+e\right)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/20*(20*sqrt(2)*d^2*f*(1/(d^6*f^4))^(1/4)*arctan(-sqrt(2)*d*f*sqrt(d*cos(f
*x + e)/sin(f*x + e))*(1/(d^6*f^4))^(1/4) + sqrt(2)*d*f*sqrt((sqrt(2)*d^5*f
^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^6*f^4))^(3/4)*sin(f*x + e) + d^4
*f^2*sqrt(1/(d^6*f^4))*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e))*(1/(d^6
*f^4))^(1/4) - 1)*cos(f*x + e)^3 + 20*sqrt(2)*d^2*f*(1/(d^6*f^4))^(1/4)*arc
tan(-sqrt(2)*d*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^6*f^4))^(1/4) + sq
rt(2)*d*f*sqrt(-(sqrt(2)*d^5*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^6*
f^4))^(3/4)*sin(f*x + e) - d^4*f^2*sqrt(1/(d^6*f^4))*sin(f*x + e) - d*cos(f
*x + e))/sin(f*x + e))*(1/(d^6*f^4))^(1/4) + 1)*cos(f*x + e)^3 + 5*sqrt(2)*
d^2*f*(1/(d^6*f^4))^(1/4)*cos(f*x + e)^3*log((sqrt(2)*d^5*f^3*sqrt(d*cos(f*
x + e)/sin(f*x + e))*(1/(d^6*f^4))^(3/4)*sin(f*x + e) + d^4*f^2*sqrt(1/(d^6
*f^4))*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e)) - 5*sqrt(2)*d^2*f*(1/(d
^6*f^4))^(1/4)*cos(f*x + e)^3*log(-(sqrt(2)*d^5*f^3*sqrt(d*cos(f*x + e)/sin
(f*x + e))*(1/(d^6*f^4))^(3/4)*sin(f*x + e) - d^4*f^2*sqrt(1/(d^6*f^4))*sin
(f*x + e) - d*cos(f*x + e))/sin(f*x + e)) - 8*(6*cos(f*x + e)^2 - 1)*sqrt(d
*cos(f*x + e)/sin(f*x + e))*sin(f*x + e))/(d^2*f*cos(f*x + e)^3)
```

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

$$\int\frac{\tan\left(fx+e\right)^2}{\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^2/(d*cot(f*x + e))^(3/2), x)
```

maple [C] time = 0.64, size = 728, normalized size = 3.14

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(5i\left(\cos^{2}\left(fx+e\right)\right)\sin\left(fx+e\right)\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^2/(d*cot(f*x+e))^(3/2),x)
```

```
[Out] 1/10/f*(-1+cos(f*x+e))*(5*I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x
+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))*sin(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(
1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x
+e))/sin(f*x+e))^(1/2)*cos(f*x+e)^2-5*I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x
+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*sin(f*x+e)*((-1+cos(f*x+e))/s
in(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+
e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*cos(f*x+e)^2-5*cos(f*x+e)^2*sin(f*x+e)*E
llipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1
/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x
+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+10*cos(f*x+e)^2*s
in(f*x+e)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1
/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x
+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-5*cos(f*x+e)^2*si
n(f*x+e)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*
I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e
))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-12*cos(
f*x+e)^3*2^(1/2)+12*cos(f*x+e)^2*2^(1/2)+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))*(1
+cos(f*x+e))^2/(d*cos(f*x+e)/sin(f*x+e))^(3/2)/sin(f*x+e)^5/cos(f*x+e)*2^(1
/2)
```

maxima [A] time = 0.65, size = 207, normalized size = 0.89

$$-\frac{d^3\left(\frac{5\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\ \cdots\right.}{\cdots}\right.}{d^4}\right.}{20f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/20*d^3*(5*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(
f*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*
sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*s
qrt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^4 - 8*(d^2 - 5
*d^2/tan(f*x + e)^2)/(d^4*(d/tan(f*x + e))^(5/2)))/f
```

mupad [B] time = 2.58, size = 93, normalized size = 0.40

$$\frac{\frac{2d}{5}-\frac{2d}{\tan(e+fx)^2}}{f\left(\frac{d}{\tan(e+fx)}\right)^{5/2}}-\frac{(-1)^{1/4}\operatorname{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{d^{3/2}f}+\frac{(-1)^{1/4}\operatorname{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan(e+fx)}}}{\sqrt{d}}\right)}{d^{3/2}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] ((2*d)/5 - (2*d)/tan(e + f*x)^2)/(f*(d/tan(e + f*x))^(5/2)) - ((-1)^(1/4)*a
tan(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/(d^(3/2)*f) + ((-1)^(1/4)
*atanh(((-1)^(1/4)*(d/tan(e + f*x))^(1/2))/d^(1/2)))/(d^(3/2)*f)
```

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

$$\int \frac{\tan^2\left(e+fx\right)}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**2/(d*cot(f*x+e))**(3/2),x)
[Out] Integral(tan(e + f*x)**2/(d*cot(e + f*x))**(3/2), x)
```

3.215 $\int \frac{\tan(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=211

$$-\frac{\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}+\frac{\log\left(\sqrt{d}\,\cot(e+fx)+\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}-\frac{\tan^{-1}\left(\right.}{}$$

```
[Out] 2/3/f/(d*cot(f*x+e))^(3/2)-1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2
))/d^(3/2)/f*2^(1/2)+1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(
3/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/
2))/d^(3/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+
e))^(1/2))/d^(3/2)/f*2^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {16, 3474, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{\log\left(\sqrt{d}\,\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}+\frac{\log\left(\sqrt{d}\,\cot(e+fx)+\sqrt{2}\,\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}-\frac{\tan^{-1}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) + 2
/(3*f*(d*Cot[e + f*x])^(3/2)) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2
]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f) + Log[Sqrt[d] + Sqrt[d]*Cot[e
 + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\tan(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx = d\int \frac{1}{(d\cot(e+fx))^{5/2}}\,dx$$

$$= \frac{2}{3f(d\cot(e+fx))^{3/2}} - \frac{\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx}{d}$$

$$= \frac{2}{3f(d\cot(e+fx))^{3/2}} + \frac{\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2}{3f(d\cot(e+fx))^{3/2}} + \frac{2\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2}{3f(d\cot(e+fx))^{3/2}} + \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} + \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \right.}{df}$$

$$= \frac{2}{3f(d\cot(e+fx))^{3/2}} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} - \frac{\text{Subst}\left(\int \frac{\sqrt{}}{-d+}\right.}{}$$

$$= \frac{2}{3f(d\cot(e+fx))^{3/2}} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} + \frac{\log\left(\sqrt{d}\right.}{}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} + \frac{2}{3f(d\cot(e+fx))^{3/2}} - \frac{\text{lo}}{}$$

Mathematica [C] time = 0.08, size = 37, normalized size = 0.18

$$\frac{2\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\cot^2(e+fx)\right)}{3f(d\cot(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (2*Hypergeometric2F1[-3/4, 1, 1/4, -Cot[e + f*x]^2])/(3*f*(d*Cot[e + f*x])^
(3/2))
```

fricas [B] time = 0.57, size = 603, normalized size = 2.86

$$-\frac{12\sqrt{2}\,d^2 f\left(\frac{1}{d^6 f^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,d^4 f^3\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^6 f^4}\right)^{\frac{3}{4}}+\sqrt{2}\,d^4 f^3\sqrt{\frac{d^4 f^2\sqrt{\frac{1}{d^6 f^4}}\sin\left(fx+e\right)+\sqrt{2}\,d^2 f\sqrt{\frac{d\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\left(\frac{1}{d^6 f^4}\right)^{\frac{1}{4}}\cdots}{\sin\left(fx+e\right)}}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] -1/12*(12*sqrt(2)*d^2*f*(1/(d^6*f^4))^(1/4)*arctan(-sqrt(2)*d^4*f^3*sqrt(d*
cos(f*x + e)/sin(f*x + e))*(1/(d^6*f^4))^(3/4) + sqrt(2)*d^4*f^3*sqrt((d^4*
f^2*sqrt(1/(d^6*f^4))*sin(f*x + e) + sqrt(2)*d^2*f*sqrt(d*cos(f*x + e)/sin(
f*x + e))*(1/(d^6*f^4))^(1/4)*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e))*
(1/(d^6*f^4))^(3/4) - 1)*cos(f*x + e)^2 + 12*sqrt(2)*d^2*f*(1/(d^6*f^4))^(1
/4)*arctan(-sqrt(2)*d^4*f^3*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^6*f^4))
^(3/4) + sqrt(2)*d^4*f^3*sqrt((d^4*f^2*sqrt(1/(d^6*f^4))*sin(f*x + e) - sqr
t(2)*d^2*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^6*f^4))^(1/4)*sin(f*x +
e) + d*cos(f*x + e))/sin(f*x + e))*(1/(d^6*f^4))^(3/4) + 1)*cos(f*x + e)^2
- 3*sqrt(2)*d^2*f*(1/(d^6*f^4))^(1/4)*cos(f*x + e)^2*log((d^4*f^2*sqrt(1/(d
^6*f^4))*sin(f*x + e) + sqrt(2)*d^2*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/
(d^6*f^4))^(1/4)*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e)) + 3*sqrt(2)*d
^2*f*(1/(d^6*f^4))^(1/4)*cos(f*x + e)^2*log((d^4*f^2*sqrt(1/(d^6*f^4))*sin(
f*x + e) - sqrt(2)*d^2*f*sqrt(d*cos(f*x + e)/sin(f*x + e))*(1/(d^6*f^4))^(1
/4)*sin(f*x + e) + d*cos(f*x + e))/sin(f*x + e)) + 8*(cos(f*x + e)^2 - 1)*s
qrt(d*cos(f*x + e)/sin(f*x + e)))/(d^2*f*cos(f*x + e)^2)
```

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

$$\int \frac{\tan\left(fx+e\right)}{\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

[Out] integrate(tan(f*x + e)/(d*cot(f*x + e))^(3/2), x)

maple [C] time = 0.59, size = 540, normalized size = 2.56

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(3i\cos\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \text{EllipticPi}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(tan(f*x+e)/(d*cot(f*x+e))^(3/2),x)

[Out] 1/6/f*(-1+cos(f*x+e))*(3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-3*I*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-3*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))*(1+cos(f*x+e))^2/sin(f*x+e)^4/(d*cos(f*x+e)/sin(f*x+e))^(3/2)*2^(1/2)

maxima [A] time = 0.74, size = 190, normalized size = 0.90

$$\frac{d^2\left(\frac{3\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\cdots}\right.}{}\right.}{d^2}\right.}{12f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/12*d^2*(3*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/d^2 + 8/(d^2*(d/t
an(f*x + e))^(3/2)))/f
```

mupad [B] time = 0.20, size = 80, normalized size = 0.38

$$\frac{2}{3\,f\left(\frac{d}{\tan\left(e+f\,x\right)}\right)^{3/2}}-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)1\mathrm{i}}{d^{3/2}\,f}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{\frac{d}{\tan\left(e+f\,x\right)}}}{\sqrt{d}}\right)1\mathrm{i}}{d^{3/2}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] 2/(3*f*(d/tan(e + f*x))^(3/2)) - ((-1)^(1/4)*atan(((-1)^(1/4)*(d/tan(e + f*
x))^(1/2))/d^(1/2))*1i)/(d^(3/2)*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(d/tan(
e + f*x))^(1/2))/d^(1/2))*1i)/(d^(3/2)*f)
```

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

$$\int \frac{\tan\left(e+fx\right)}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)/(d*cot(f*x+e))**(3/2),x)
```

```
[Out] Integral(tan(e + f*x)/(d*cot(e + f*x))**(3/2), x)
```

3.216 $\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=212

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}-\frac{\tan^{-1}\left(1\right.}{}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)+1/2*a
rctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)+1/4*ln(d^(1
/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2)-1/4*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/
2)+2/d/f/(d*cot(f*x+e))^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}-\frac{\tan^{-1}\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Cot[e + f*x])^(-3/2),x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) + 2
/(d*f*Sqrt[d*Cot[e + f*x]]) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*
Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f) - Log[Sqrt[d] + Sqrt[d]*Cot[e +
 f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
```

```
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{1}{(d\cot(e+fx))^{3/2}}\,dx = \frac{2}{df\sqrt{d\cot(e+fx)}} - \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d^2}$$

$$= \frac{2}{df\sqrt{d\cot(e+fx)}} + \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{df}$$

$$= \frac{2}{df\sqrt{d\cot(e+fx)}} + \frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df}$$

$$= \frac{2}{df\sqrt{d\cot(e+fx)}} - \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} + \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{\right.}{df}$$

$$= \frac{2}{df\sqrt{d\cot(e+fx)}} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\,d^{3/2}f} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}}{-d+\sqrt{2}}\right.}{}$$

$$= \frac{2}{df\sqrt{d\cot(e+fx)}} + \frac{\log\left(\sqrt{d}+\sqrt{d}\,\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\,d^{3/2}f} - \frac{\log\left(\sqrt{d}+\right.}{}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} + \frac{2}{df\sqrt{d\cot(e+fx)}} + \frac{\log}{}$$

Mathematica [C] time = 0.01, size = 38, normalized size = 0.18

$$\frac{2\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\cot^2(e+fx)\right)}{df\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Cot[e + f*x])^(-3/2),x]
```

```
[Out] (2*Hypergeometric2F1[-1/4, 1, 3/4, -Cot[e + f*x]^2])/(d*f*Sqrt[d*Cot[e + f*
x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{1}{\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*cot(f*x + e))^(-3/2), x)
```

maple [A] time = 0.11, size = 184, normalized size = 0.87

$$\frac{\sqrt{2}\,\ln\left(\frac{d\cot\left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}{d\cot\left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}\right)}{4fd\left(d^{2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2fd\left(d^{2}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2fd\left(d^{2}\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*cot(f*x+e))^(3/2),x)
```

```
[Out] 1/4/f/d/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/
2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1
/2)+(d^2)^(1/2)))+1/2/f/d/(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(d
*cot(f*x+e))^(1/2)+1)-1/2/f/d/(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/
4)*(d*cot(f*x+e))^(1/2)+1)+2/d/f/(d*cot(f*x+e))^(1/2)
```

maxima [A] time = 0.70, size = 187, normalized size = 0.88

$$\frac{d\left(\frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}+d+\frac{d}{\tan(fx+e)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log\left(-\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}\right.}{\sqrt{d}}}{d^2}\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*d*((2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x +
e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*
sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt(d
/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(d)
*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/d^2 + 8/(d^2*sqrt(d/ta
n(f*x + e))))/f
```

mupad [B] time = 2.61, size = 76, normalized size = 0.36

$$\frac{2}{d\,f\,\sqrt{d\cot\left(e+f\,x\right)}}+\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{d^{3/2}\,f}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{d^{3/2}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] 2/(d*f*(d*cot(e + f*x))^(1/2)) + ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*
x))^(1/2))/d^(1/2)))/(d^(3/2)*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*cot(e +
 f*x))^(1/2))/d^(1/2)))/(d^(3/2)*f)
```

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

$$\int \frac{1}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*cot(f*x+e))**(3/2),x)
[Out] Integral((d*cot(e + f*x))**(-3/2), x)
```

3.217 $\int \frac{\cot(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=192

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}+\frac{\tan^{-1}\left(1\right.}{}$$

```
[Out] 1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)-1/2*ar
ctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)+1/4*ln(d^(1/
2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2)-1/4*l
n(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2
)
```

Rubi [A] time = 0.13, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$, Rules used = {16, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}+\frac{\tan^{-1}\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) + Log[
Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d
^(3/2)*f) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x
]]]/(2*Sqrt[2]*d^(3/2)*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

```
IntegerQ[n]
```

Rubi steps

$$\int \frac{\cot(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx = \frac{\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx}{d}$$
$$= -\frac{\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$
$$= -\frac{2\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$
$$= -\frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} - \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df}$$
$$= \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}-2x}{-d+\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(\right.}{2\sqrt{2}d^{3/2}f}$$
$$= \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)+\sqrt{2}\right.}{2\sqrt{2}d^{3/2}f}$$
$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)\right.}{2\sqrt{2}d^{3}}$$

Mathematica [A] time = 0.03, size = 134, normalized size = 0.70

$$\frac{\sqrt{\cot(e+fx)}\left(\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\log\left(\cot(e+fx)+\sqrt{2}\sqrt{\cot(e+fx)}+1\right)+2\tan^{-1}\left(\right.\right.}{2\sqrt{2}df\sqrt{d\cot(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (Sqrt[Cot[e + f*x]]*(2*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]] - 2*ArcTan[1
+ Sqrt[2]*Sqrt[Cot[e + f*x]]] + Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e
+ f*x]] - Log[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(2*Sqrt[2]*d
*f*Sqrt[d*Cot[e + f*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{\cot\left(fx+e\right)}{\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(cot(f*x + e)/(d*cot(f*x + e))^(3/2), x)
```

maple [A] time = 0.10, size = 166, normalized size = 0.86

$$-\frac{\left(d^2\right)^{\frac{1}{4}}\sqrt{2}\,\ln\left(\frac{d\cot\left(fx+e\right)+\left(d^2\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^2}}{d\cot\left(fx+e\right)-\left(d^2\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^2}}\right)}{4f\,d^2}-\frac{\left(d^2\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^2\right)^{\frac{1}{4}}}+1\right)}{2f\,d^2}+\frac{\left(d^2\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\right.}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)/(d*cot(f*x+e))^(3/2),x)
```

```
[Out] -1/4/f*(d^2)^(1/4)/d^2*2^(1/2)*ln((d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^
(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2
^(1/2)+(d^2)^(1/2)))-1/2/f*(d^2)^(1/4)/d^2*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/
4)*(d*cot(f*x+e))^(1/2)+1)+1/2/f*(d^2)^(1/4)/d^2*2^(1/2)*arctan(-2^(1/2)/(d
^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.48, size = 164, normalized size = 0.85

$$-\frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{d^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{d^{\frac{3}{2}}}-\frac{\sqrt{2}\log\left(-\right.}{}}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x + e)
))/sqrt(d))/d^(3/2) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*sq
rt(d/tan(f*x + e)))/sqrt(d))/d^(3/2) + sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt(d/t
an(f*x + e)) + d + d/tan(f*x + e))/d^(3/2) - sqrt(2)*log(-sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/d^(3/2))/f
```

mupad [B] time = 2.58, size = 57, normalized size = 0.30

$$\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)1\mathrm{i}}{d^{3/2}\,f}+\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)1\mathrm{i}}{d^{3/2}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/(d^(3/2)*
f) + ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/(d^
(3/2)*f)
```

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

$$\int \frac{\cot\left(e+fx\right)}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)/(d*cot(f*x+e))**(3/2),x)
```

```
[Out] Integral(cot(e + f*x)/(d*cot(e + f*x))**(3/2), x)
```

3.218 $\int \frac{\cot^2(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=192

$$-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\tan^{-1}\left(1\right.}{}$$

```
[Out] 1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)-1/2*ar
ctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)-1/4*ln(d^(1/
2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2)+1/4*l
n(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2
)
```

Rubi [A] time = 0.13, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {16, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}+\frac{\tan^{-1}\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^2/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) - Log[
Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d
^(3/2)*f) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x
]]]/(2*Sqrt[2]*d^(3/2)*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

`IntegerQ[n]`

Rubi steps

$$\int \frac{\cot^2(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx = \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d^2}$$
$$= -\frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{df}$$
$$= -\frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df}$$
$$= \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} - \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df}$$
$$= -\frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}-2x}{-d+\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\,\text{cot}(}\right.}{2\sqrt{2}d^{3/2}f}$$
$$= -\frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)+\sqrt{2}\right.}{2\sqrt{2}d^{3/2}f}$$
$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\right.}{2\sqrt{2}d^{3/2}}$$

Mathematica [C] time = 0.01, size = 40, normalized size = 0.21

$$-\frac{2(d\cot(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)}{3d^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^2/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (-2*(d*Cot[e + f*x])^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x]^2])
/(3*d^3*f)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{\cot\left(fx+e\right)^{2}}{\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(cot(f*x + e)^2/(d*cot(f*x + e))^(3/2), x)
```

maple [A] time = 0.15, size = 166, normalized size = 0.86

$$-\frac{\sqrt{2}\,\ln\left(\frac{d\cot\left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}{d\cot\left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}\right)}{4fd\left(d^{2}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2fd\left(d^{2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+\right.}{2fd\left(d^{2}\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^2/(d*cot(f*x+e))^(3/2),x)
```

```
[Out] -1/4/f/d/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1
/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(
1/2)+(d^2)^(1/2)))-1/2/f/d/(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(
d*cot(f*x+e))^(1/2)+1)+1/2/f/d/(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1
/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.80, size = 167, normalized size = 0.87

$$-\frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\log}{}}{4df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f*x + e)
))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*sq
rt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*sqrt(d/t
an(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d))/(d*f)
```

mupad [B] time = 2.48, size = 58, normalized size = 0.30

$$\frac{(-1)^{1/4}\operatorname{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{d^{3/2}\,f}-\frac{(-1)^{1/4}\operatorname{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+f\,x)}}{\sqrt{d}}\right)}{d^{3/2}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^2/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/(d^(3/2)*f)
 - ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/(d^(3/2)*
f)
```

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

$$\int \frac{\cot^{2}\left(e+fx\right)}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**2/(d*cot(f*x+e))**(3/2),x)
```

```
[Out] Integral(cot(e + f*x)**2/(d*cot(e + f*x))**(3/2), x)
```

3.219 $\int \frac{\cot^3(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=212

$$-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}-\frac{\tan^{-1}\left(\right.}{}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)+1/2*a
rctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2))/d^(3/2)/f*2^(1/2)-1/4*ln(d^(1
/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2)+1/4*
ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot(f*x+e))^(1/2))/d^(3/2)/f*2^(1/
2)-2*(d*cot(f*x+e))^(1/2)/d^2/f
```

Rubi [A] time = 0.16, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{2\sqrt{d\cot(e+fx)}}{d^2f}-\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}+\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+f\right.}{2\sqrt{2}\,d^{3/2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^3/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) - (
2*Sqrt[d*Cot[e + f*x]])/(d^2*f) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt
[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f) + Log[Sqrt[d] + Sqrt[d]*Cot
[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\cot^3(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx = \frac{\int (d\cot(e+fx))^{3/2}\,dx}{d^3}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{d^2 f} - \frac{\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx}{d}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{d^2 f} + \frac{\text{Subst}\left(\int \frac{1}{\sqrt{x}\,(d^2+x^2)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{d^2 f} + \frac{2\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{d^2 f} + \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} + \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{\ldots}\right.}{df}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{d^2 f} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\ldots}{-d+\sqrt{2}\ldots}\right.}{}$$

$$= -\frac{2\sqrt{d\cot(e+fx)}}{d^2 f} - \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}d^{3/2}f} + \frac{\log\left(\sqrt{d}+\ldots\right.}{}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}d^{3/2}f} - \frac{2\sqrt{d\cot(e+fx)}}{d^2 f} - \frac{\log\left(\ldots\right.}{}$$

Mathematica [A] time = 0.16, size = 159, normalized size = 0.75

$$-\frac{\cot^{\frac{3}{2}}(e+fx)\left(8\sqrt{\cot(e+fx)}+\sqrt{2}\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-\sqrt{2}\log\left(\cot(e+fx)+\sqrt{2}\sqrt{\text{co}\ldots}\right.\right.}{4f(d\cot(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^3/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] -1/4*(Cot[e + f*x]^(3/2)*(2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]]
- 2*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + 8*Sqrt[Cot[e + f*x]] +
 Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]] - Sqrt[2]*Log[1
 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(f*(d*Cot[e + f*x])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.16, size = 184, normalized size = 0.87

$$-\frac{2\sqrt{d\cot\left(fx+e\right)}}{d^{2}f}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\,d^{2}}-\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\,d^{2}}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^3/(d*cot(f*x+e))^(3/2),x)
```

```
[Out] -2*(d*cot(f*x+e))^(1/2)/d^2/f+1/2/f*(d^2)^(1/4)/d^2*2^(1/2)*arctan(2^(1/2)/
(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f*(d^2)^(1/4)/d^2*2^(1/2)*arctan(-2
^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)+1/4/f*(d^2)^(1/4)/d^2*2^(1/2)*ln
((d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot
(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))
```

maxima [A] time = 0.69, size = 181, normalized size = 0.85

$$\frac{2\sqrt{2}\sqrt{d}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+2\sqrt{2}\sqrt{d}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+\sqrt{2}\sqrt{d}\log\left(\sqrt{2}\sqrt{d}\sqrt{\frac{d}{\tan(fx+e)}}\right.}{4d^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*sqrt(d)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d)) + 2*sqrt(2)*sqrt(d)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d)) + sqrt(2)*sqrt(d)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - sqrt(2)*sqrt(d)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 8*sqrt(d/tan(f*x + e)))/
(d^2*f)
```

mupad [B] time = 2.62, size = 77, normalized size = 0.36

$$-\frac{2\sqrt{d\cot\left(e+fx\right)}}{d^2 f}-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)1\mathrm{i}}{d^{3/2} f}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)1\mathrm{i}}{d^{3/2} f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^3/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] - (2*(d*cot(e + f*x))^(1/2))/(d^2*f) - ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(
e + f*x))^(1/2))/d^(1/2))*1i)/(d^(3/2)*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(
d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/(d^(3/2)*f)
```

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

$$\int \frac{\cot^3\left(e+fx\right)}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**3/(d*cot(f*x+e))**(3/2),x)
```

```
[Out] Integral(cot(e + f*x)**3/(d*cot(e + f*x))**(3/2), x)
```

3.220 $\int \frac{\cot^4(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=214

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}-\frac{\tan^{-1}\left(1-\right.}{\sqrt{}}$$

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/d^3/f-1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d
^(1/2))/d^(3/2)/f*2^(1/2)+1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2)
)/d^(3/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e)
)^(1/2))/d^(3/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot
(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {16, 3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{2(d\cot(e+fx))^{3/2}}{3d^3f}+\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+f}\right.}{2\sqrt{2}d^{3/2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^4/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] -(ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f)) +
 ArcTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) - (
2*(d*Cot[e + f*x])^(3/2))/(3*d^3*f) + Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] -
Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f) - Log[Sqrt[d] + Sqrt[d]
*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^(3/2)*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
```

```
x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\cot^4(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx = \frac{\int (d\cot(e+fx))^{5/2}\,dx}{d^4}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^3f} - \frac{\int \sqrt{d\cot(e+fx)}\,dx}{d^2}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^3f} + \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\cot(e+fx)\right)}{df}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^3f} + \frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^3f} - \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} + \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{\ldots}\right.}{df}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^3f} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\,d^{3/2}f} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\ldots}{-d+\sqrt{\ldots}}\right.}{\ldots}$$

$$= -\frac{2(d\cot(e+fx))^{3/2}}{3d^3f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}\right)}{2\sqrt{2}\,d^{3/2}f} - \frac{\log\left(\sqrt{d}+\ldots\right.}{\ldots}$$

$$= -\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} + \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} - \frac{2(d\cot(e+fx))^{3/2}}{3d^3f} + \frac{\log\left(\ldots\right.}{\ldots}$$

Mathematica [C] time = 0.09, size = 47, normalized size = 0.22

$$\frac{2\cot^3(e+fx)\left({}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\cot^2(e+fx)\right)-1\right)}{3f(d\cot(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^4/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (2*Cot[e + f*x]^3*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Cot[e + f*x]^2]))/(
3*f*(d*Cot[e + f*x])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{\cot\left(fx+e\right)^{4}}{\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(cot(f*x + e)^4/(d*cot(f*x + e))^(3/2), x)
```

maple [A] time = 0.14, size = 184, normalized size = 0.86

$$-\frac{2\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}{3d^{3}f}+\frac{\sqrt{2}\,\ln\left(\frac{d\cot\left(fx+e\right)-\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}{d\cot\left(fx+e\right)+\left(d^{2}\right)^{\frac{1}{4}}\sqrt{d\cot\left(fx+e\right)}\,\sqrt{2}+\sqrt{d^{2}}}\right)}{4fd\left(d^{2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2fd\left(d^{2}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\,\mathrm{arcta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^4/(d*cot(f*x+e))^(3/2),x)
```

```
[Out] -2/3*(d*cot(f*x+e))^(3/2)/d^3/f+1/4/f/d/(d^2)^(1/4)*2^(1/2)*ln((d*cot(f*x+e
)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)+(d^2)
^(1/4)*(d*cot(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))+1/2/f/d/(d^2)^(1/4)*2^(1/
2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1/2/f/d/(d^2)^(1/4)*2
^(1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.63, size = 187, normalized size = 0.87

$$\frac{3\,d^{2}\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(\sqrt{2}\,\sqrt{d}\,\sqrt{\frac{d}{\tan\left(fx+e\right)}}+d+\frac{d}{\tan\left(fx+e\right)}\right)}{\sqrt{d}}+\frac{\sqrt{2}\,\mathrm{l}\cdots}{}\right.}{12\,d^{3}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/12*(3*d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/tan(f
*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d/tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(sqrt(2)*sqrt(d)*s
qrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d) + sqrt(2)*log(-sqrt(2)*sq
rt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e))/sqrt(d)) - 8*(d/tan(f*x +
e))^(3/2))/(d^3*f)
```

mupad [B] time = 2.65, size = 76, normalized size = 0.36

$$\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)}{d^{3/2}\,f}-\frac{2\,\left(d\cot\left(e+f\,x\right)\right)^{3/2}}{3\,d^{3}\,f}-\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{d\cot\left(e+f\,x\right)}}{\sqrt{d}}\right)}{d^{3/2}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^4/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2)))/(d^(3/2)*f)
- (2*(d*cot(e + f*x))^(3/2))/(3*d^3*f) - ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*c
ot(e + f*x))^(1/2))/d^(1/2)))/(d^(3/2)*f)
```

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

$$\int\frac{\cot^{4}\left(e+fx\right)}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**4/(d*cot(f*x+e))**(3/2),x)
```

```
[Out] Integral(cot(e + f*x)**4/(d*cot(e + f*x))**(3/2), x)
```

3.221 $\int \frac{\cot^5(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=234

$$\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx)+\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}+\frac{\tan^{-1}\left(1\right.}{}$$

```
[Out] -2/5*(d*cot(f*x+e))^(5/2)/d^4/f+1/2*arctan(1-2^(1/2)*(d*cot(f*x+e))^(1/2)/d
^(1/2))/d^(3/2)/f*2^(1/2)-1/2*arctan(1+2^(1/2)*(d*cot(f*x+e))^(1/2)/d^(1/2)
)/d^(3/2)/f*2^(1/2)+1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)-2^(1/2)*(d*cot(f*x+e)
)^(1/2))/d^(3/2)/f*2^(1/2)-1/4*ln(d^(1/2)+cot(f*x+e)*d^(1/2)+2^(1/2)*(d*cot
(f*x+e))^(1/2))/d^(3/2)/f*2^(1/2)+2*(d*cot(f*x+e))^(1/2)/d^2/f
```

Rubi [A] time = 0.19, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.476$, Rules used = {16, 3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{2(d\cot(e+fx))^{5/2}}{5d^4f}+\frac{2\sqrt{d\cot(e+fx)}}{d^2f}+\frac{\log\left(\sqrt{d}\cot(e+fx)-\sqrt{2}\sqrt{d\cot(e+fx)}+\sqrt{d}\right)}{2\sqrt{2}\,d^{3/2}f}-\frac{\log\left(\sqrt{d}\cot(e+fx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^5/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Cot[e + f*x]])/Sqrt[d]]/(Sqrt[2]*d^(3/2)*f) + (2*S
qrt[d*Cot[e + f*x]])/(d^2*f) - (2*(d*Cot[e + f*x])^(5/2))/(5*d^4*f) + Log[S
qrt[d] + Sqrt[d]*Cot[e + f*x] - Sqrt[2]*Sqrt[d*Cot[e + f*x]]]/(2*Sqrt[2]*d^
(3/2)*f) - Log[Sqrt[d] + Sqrt[d]*Cot[e + f*x] + Sqrt[2]*Sqrt[d*Cot[e + f*x]
]]/(2*Sqrt[2]*d^(3/2)*f)
```

Rule 16

```
Int[(u_.)*(v_)^(m_.)*((b_)*(v_))^(n_), x_Symbol] :> Dist[1/b^m, Int[u*(b*v)
^(m + n), x], x] /; FreeQ[{b, n}, x] && IntegerQ[m]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
```

```
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \frac{\cot^5(e+fx)}{(d\cot(e+fx))^{3/2}}\,dx = \frac{\int (d\cot(e+fx))^{7/2}\,dx}{d^5}$$

$$= -\frac{2(d\cot(e+fx))^{5/2}}{5d^4f} - \frac{\int (d\cot(e+fx))^{3/2}\,dx}{d^3}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{d^2f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^4f} + \frac{\int \frac{1}{\sqrt{d\cot(e+fx)}}\,dx}{d}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{d^2f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^4f} - \frac{\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\cot(e+fx)\right)}{f}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{d^2f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^4f} - \frac{2\,\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{f}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{d^2f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^4f} - \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\cot(e+fx)}\right)}{df} - \text{Su}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{d^2f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^4f} + \frac{\text{Subst}\left(\int \frac{\sqrt{2}\,\sqrt{d}+2x}{-d-\sqrt{2}\,\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\cot(e+fx)}\right.}{2\sqrt{2}\,d^{3/2}f}$$

$$= \frac{2\sqrt{d\cot(e+fx)}}{d^2f} - \frac{2(d\cot(e+fx))^{5/2}}{5d^4f} + \frac{\log\left(\sqrt{d}+\sqrt{d}\cot(e+fx)-\sqrt{2}\,\sqrt{d\cot(e+\right.}{2\sqrt{2}\,d^{3/2}f}$$

$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt{d\cot(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}\,d^{3/2}f} + \frac{2\sqrt{d\cot(e+fx)}}{d^2f} - \frac{2(d\cot}{}$$

Mathematica [A] time = 0.44, size = 172, normalized size = 0.74

$$\frac{\cot^{\frac{3}{2}}(e+fx)\left(-8\cot^{\frac{5}{2}}(e+fx)+40\sqrt{\cot(e+fx)}+5\sqrt{2}\log\left(\cot(e+fx)-\sqrt{2}\sqrt{\cot(e+fx)}+1\right)-5\sqrt{2}\log\left(\mathrm{co}\right.\right.}{20f(d\cot(e}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^5/(d*Cot[e + f*x])^(3/2),x]
```

```
[Out] (Cot[e + f*x]^(3/2)*(10*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Cot[e + f*x]]] - 10
*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[Cot[e + f*x]]] + 40*Sqrt[Cot[e + f*x]] - 8
*Cot[e + f*x]^(5/2) + 5*Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e
+ f*x]] - 5*Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Cot[e + f*x]] + Cot[e + f*x]]))/(2
0*f*(d*Cot[e + f*x])^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5/(d*cot(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   catde
f: division by zero
```

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

$$\int \frac{\cot\left(fx+e\right)^{5}}{\left(d\cot\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5/(d*cot(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(cot(f*x + e)^5/(d*cot(f*x + e))^(3/2), x)
```

maple [A] time = 0.15, size = 202, normalized size = 0.86

$$-\frac{2\left(d\cot\left(fx+e\right)\right)^{\frac{5}{2}}}{5d^{4}f}+\frac{2\sqrt{d\cot\left(fx+e\right)}}{d^{2}f}-\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\cot\left(fx+e\right)}}{\left(d^{2}\right)^{\frac{1}{4}}}+1\right)}{2f\,d^{2}}+\frac{\left(d^{2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\cot(f}}{\left(d^{2}\right)^{\frac{1}{4}}}\right.}{2f\,d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^5/(d*cot(f*x+e))^(3/2),x)
```

```
[Out] -2/5*(d*cot(f*x+e))^(5/2)/d^4/f+2*(d*cot(f*x+e))^(1/2)/d^2/f-1/2/f*(d^2)^(1
/4)/d^2*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)+1/2/f*(d
^2)^(1/4)/d^2*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)+1)-1
/4/f*(d^2)^(1/4)/d^2*2^(1/2)*ln((d*cot(f*x+e)+(d^2)^(1/4)*(d*cot(f*x+e))^(1
/2)*2^(1/2)+(d^2)^(1/2))/(d*cot(f*x+e)-(d^2)^(1/4)*(d*cot(f*x+e))^(1/2)*2^(
1/2)+(d^2)^(1/2)))
```

maxima [A] time = 0.92, size = 199, normalized size = 0.85

$$-\frac{10\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+10\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{\frac{d}{\tan(fx+e)}}\right)}{2\sqrt{d}}\right)+5\sqrt{2}\,d^{\frac{5}{2}}\log\left(\sqrt{2}\sqrt{d}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5/(d*cot(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/20*(10*sqrt(2)*d^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d/ta
n(f*x + e)))/sqrt(d)) + 10*sqrt(2)*d^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqr
t(d) - 2*sqrt(d/tan(f*x + e)))/sqrt(d)) + 5*sqrt(2)*d^(5/2)*log(sqrt(2)*sqr
t(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 5*sqrt(2)*d^(5/2)*log(-sq
rt(2)*sqrt(d)*sqrt(d/tan(f*x + e)) + d + d/tan(f*x + e)) - 40*d^2*sqrt(d/ta
n(f*x + e)) + 8*(d/tan(f*x + e))^(5/2))/(d^4*f)
```

mupad [B] time = 2.98, size = 93, normalized size = 0.40

$$\frac{2\sqrt{d\cot\left(e+fx\right)}}{d^2 f}-\frac{2\left(d\cot\left(e+fx\right)\right)^{5/2}}{5\,d^4 f}+\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(e+fx\right)}}{\sqrt{d}}\right)1i}{d^{3/2} f}+\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\sqrt{d\cot\left(e+fx\right)}\,1i}{\sqrt{d}}\right.}{d^{3/2} f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^5/(d*cot(e + f*x))^(3/2),x)
```

```
[Out] (2*(d*cot(e + f*x))^(1/2))/(d^2*f) - (2*(d*cot(e + f*x))^(5/2))/(5*d^4*f) +
 ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2))/d^(1/2))*1i)/(d^(3/2)
*f) + ((-1)^(1/4)*atan(((-1)^(1/4)*(d*cot(e + f*x))^(1/2)*1i)/d^(1/2)))/(d^
(3/2)*f)
```

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

$$\int\frac{\cot^5\left(e+fx\right)}{\left(d\cot\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**5/(d*cot(f*x+e))**(3/2),x)
[Out] Integral(cot(e + f*x)**5/(d*cot(e + f*x))**(3/2), x)
```

3.222 $\int \cot^m(e+fx)\tan^n(e+fx)\,dx$

Optimal. Leaf size=62

$$\frac{\cot^m(e+fx)\tan^{n+1}(e+fx)\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{f(-m+n+1)}$$

```
[Out] cot(f*x+e)^m*hypergeom([1, 1/2-1/2*m+1/2*n],[3/2-1/2*m+1/2*n],-tan(f*x+e)^2
)*tan(f*x+e)^(1+n)/f/(1-m+n)
```

Rubi [A] time = 0.06, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {2604, 3476, 364}

$$\frac{\cot^m(e+fx)\tan^{n+1}(e+fx)\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{f(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^m*Tan[e + f*x]^n,x]
```

```
[Out] (Cot[e + f*x]^m*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n)/2, -Tan[e +
 f*x]^2]*Tan[e + f*x]^(1 + n))/(f*(1 - m + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2604

```
Int[(cot[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Cot[e + f*x])^m*(b*Tan[e + f*x])^m, Int[(b*Tan[e +
 f*x])^(n - m), x], x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[m] &&
 !IntegerQ[n]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \cot^m(e+fx)\tan^n(e+fx)\,dx = \left(\cot^m(e+fx)\tan^m(e+fx)\right)\int \tan^{-m+n}(e+fx)\,dx$$
$$= \frac{\left(\cot^m(e+fx)\tan^m(e+fx)\right)\operatorname{Subst}\left(\int \frac{x^{-m+n}}{1+x^2}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{\cot^m(e+fx)\,{}_2F_1\left(1,\frac{1}{2}(1-m+n);\frac{1}{2}(3-m+n);-\tan^2(e+fx)\right)\tan^{1+n}(e+fx)}{f(1-m+n)}$$

Mathematica [A] time = 0.09, size = 62, normalized size = 1.00

$$\frac{\cot^m(e+fx)\tan^{n+1}(e+fx)\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{f(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^m*Tan[e + f*x]^n,x]
[Out] (Cot[e + f*x]^m*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n)/2, -Tan[e +
 f*x]^2]*Tan[e + f*x]^(1 + n))/(f*(1 - m + n))
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\cot\left(fx+e\right)^m\tan\left(fx+e\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^m*tan(f*x+e)^n,x, algorithm="fricas")
[Out] integral(cot(f*x + e)^m*tan(f*x + e)^n, x)
```

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

$$\int \cot\left(fx+e\right)^m\tan\left(fx+e\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^m*tan(f*x+e)^n,x, algorithm="giac")
[Out] integrate(cot(f*x + e)^m*tan(f*x + e)^n, x)
```

maple [F] time = 0.91, size = 0, normalized size = 0.00

$$\int \left(\cot^{m}\left(fx+e\right)\right)\left(\tan^{n}\left(fx+e\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^m*tan(f*x+e)^n,x)
[Out] int(cot(f*x+e)^m*tan(f*x+e)^n,x)
```

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

$$\int \cot\left(fx+e\right)^{m}\tan\left(fx+e\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^m*tan(f*x+e)^n,x, algorithm="maxima")
[Out] integrate(cot(f*x + e)^m*tan(f*x + e)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int {\mathrm{cot}\left(e+f\,x\right)}^m\,{\mathrm{tan}\left(e+f\,x\right)}^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^m*tan(e + f*x)^n,x)
[Out] int(cot(e + f*x)^m*tan(e + f*x)^n, x)
```

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

$$\int \tan^{n}{\left(e+fx\right)}\cot^{m}{\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**m*tan(f*x+e)**n,x)
[Out] Integral(tan(e + f*x)**n*cot(e + f*x)**m, x)
```

3.223 $\int \cot^m(e+fx)(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=67

$$\frac{\cot^m(e+fx)(b\tan(e+fx))^{n+1}\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{bf(-m+n+1)}$$

```
[Out] cot(f*x+e)^m*hypergeom([1, 1/2-1/2*m+1/2*n],[3/2-1/2*m+1/2*n],-tan(f*x+e)^2
)*(b*tan(f*x+e))^(1+n)/b/f/(1-m+n)
```

Rubi [A] time = 0.07, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2604, 3476, 364}

$$\frac{\cot^m(e+fx)(b\tan(e+fx))^{n+1}\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{bf(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Cot[e + f*x]^m*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n)/2, -Tan[e +
 f*x]^2]*(b*Tan[e + f*x])^(1 + n))/(b*f*(1 - m + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2604

```
Int[(cot[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Cot[e + f*x])^m*(b*Tan[e + f*x])^m, Int[(b*Tan[e +
 f*x])^(n - m), x], x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[m] &&
 !IntegerQ[n]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \cot^m(e+fx)(b\tan(e+fx))^n\,dx = \left(\cot^m(e+fx)(b\tan(e+fx))^m\right)\int (b\tan(e+fx))^{-m+n}\,dx$$
$$= \frac{\left(b\cot^m(e+fx)(b\tan(e+fx))^m\right)\text{Subst}\left(\int \frac{x^{-m+n}}{b^2+x^2}\,dx, x, b\tan(e+fx)\right)}{f}$$
$$= \frac{\cot^m(e+fx)\,{}_2F_1\left(1,\frac{1}{2}(1-m+n);\frac{1}{2}(3-m+n);-\tan^2(e+fx)\right)(b\tan(e+}{bf(1-m+n)}$$

Mathematica [A] time = 0.07, size = 64, normalized size = 0.96

$$\frac{\cot^{m-1}(e+fx)(b\tan(e+fx))^n\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{f(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] (Cot[e + f*x]^(-1 + m)*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n)/2, -
Tan[e + f*x]^2]*(b*Tan[e + f*x])^n)/(f*(1 - m + n))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\tan\left(fx+e\right)\right)^n\cot\left(fx+e\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^m*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((b*tan(f*x + e))^n*cot(f*x + e)^m, x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^n\cot\left(fx+e\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^m*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^n*cot(f*x + e)^m, x)
```

maple [F] time = 0.73, size = 0, normalized size = 0.00

$$\int \left(\cot^{m}\left(fx+e\right)\right)\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^m*(b*tan(f*x+e))^n,x)
[Out] int(cot(f*x+e)^m*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(b\tan\left(fx+e\right)\right)^{n}\cot\left(fx+e\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^m*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^n*cot(f*x + e)^m, x)
```

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

$$\int \cot\left(e+f\,x\right)^{m}\,\left(b\tan\left(e+f\,x\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^m*(b*tan(e + f*x))^n,x)
[Out] int(cot(e + f*x)^m*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(b\tan\left(e+fx\right)\right)^{n}\cot^{m}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**m*(b*tan(f*x+e))**n,x)
[Out] Integral((b*tan(e + f*x))**n*cot(e + f*x)**m, x)
```

3.224 $\int (a\cot(e+fx))^m \tan^n(e+fx)\,dx$

Optimal. Leaf size=64

$$\frac{\tan^{n+1}(e+fx)(a\cot(e+fx))^m\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{f(-m+n+1)}$$

```
[Out] (a*cot(f*x+e))^m*hypergeom([1, 1/2-1/2*m+1/2*n],[3/2-1/2*m+1/2*n],-tan(f*x+
e)^2)*tan(f*x+e)^(1+n)/f/(1-m+n)
```

Rubi [A] time = 0.06, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2604, 3476, 364}

$$\frac{\tan^{n+1}(e+fx)(a\cot(e+fx))^m\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{f(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Cot[e + f*x])^m*Tan[e + f*x]^n,x]
```

```
[Out] ((a*Cot[e + f*x])^m*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n)/2, -Tan
[e + f*x]^2]*Tan[e + f*x]^(1 + n))/(f*(1 - m + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2604

```
Int[(cot[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Cot[e + f*x])^m*(b*Tan[e + f*x])^m, Int[(b*Tan[e +
 f*x])^(n - m), x], x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[m] &&
 !IntegerQ[n]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int (a\cot(e+fx))^m \tan^n(e+fx)\,dx = \left((a\cot(e+fx))^m \tan^m(e+fx)\right)\int \tan^{-m+n}(e+fx)\,dx$$
$$= \frac{\left((a\cot(e+fx))^m \tan^m(e+fx)\right)\text{Subst}\left(\int \frac{x^{-m+n}}{1+x^2}\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{(a\cot(e+fx))^m\, {}_2F_1\left(1, \frac{1}{2}(1-m+n); \frac{1}{2}(3-m+n); -\tan^2(e+fx)\right)\tan^{1+n}(}{f(1-m+n)}$$

Mathematica [A] time = 0.06, size = 64, normalized size = 1.00

$$\frac{\tan^{n+1}(e+fx)(a\cot(e+fx))^m\, {}_2F_1\left(1, \frac{1}{2}(-m+n+1); \frac{1}{2}(-m+n+3); -\tan^2(e+fx)\right)}{f(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Cot[e + f*x])^m*Tan[e + f*x]^n,x]
```

```
[Out] ((a*Cot[e + f*x])^m*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n)/2, -Tan
[e + f*x]^2]*Tan[e + f*x]^(1 + n))/(f*(1 - m + n))
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\cot\left(fx+e\right)\right)^m \tan\left(fx+e\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))^m*tan(f*x+e)^n,x, algorithm="fricas")
```

```
[Out] integral((a*cot(f*x + e))^m*tan(f*x + e)^n, x)
```

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

$$\int \left(a\cot\left(fx+e\right)\right)^m \tan\left(fx+e\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))^m*tan(f*x+e)^n,x, algorithm="giac")
```

```
[Out] integrate((a*cot(f*x + e))^m*tan(f*x + e)^n, x)
```

maple [F] time = 0.86, size = 0, normalized size = 0.00

$$\int \left(a\cot\left(fx+e\right)\right)^{m} \left(\tan^{n}\left(fx+e\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*cot(f*x+e))^m*tan(f*x+e)^n,x)
[Out] int((a*cot(f*x+e))^m*tan(f*x+e)^n,x)
```

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

$$\int \left(a\cot\left(fx+e\right)\right)^{m} \tan\left(fx+e\right)^{n} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))^m*tan(f*x+e)^n,x, algorithm="maxima")
[Out] integrate((a*cot(f*x + e))^m*tan(f*x + e)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^{n} \left(a\cot\left(e+f\,x\right)\right)^{m} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^n*(a*cot(e + f*x))^m,x)
[Out] int(tan(e + f*x)^n*(a*cot(e + f*x))^m, x)
```

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

$$\int \left(a\cot\left(e+fx\right)\right)^{m} \tan^{n}\left(e+fx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))**m*tan(f*x+e)**n,x)
[Out] Integral((a*cot(e + f*x))**m*tan(e + f*x)**n, x)
```

3.225 $\int (a\cot(e+fx))^m (b\tan(e+fx))^n\,dx$

Optimal. Leaf size=69

$$\frac{(a\cot(e+fx))^m (b\tan(e+fx))^{n+1}\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{bf(-m+n+1)}$$

```
[Out] (a*cot(f*x+e))^m*hypergeom([1, 1/2-1/2*m+1/2*n],[3/2-1/2*m+1/2*n],-tan(f*x+
e)^2)*(b*tan(f*x+e))^(1+n)/b/f/(1-m+n)
```

Rubi [A] time = 0.07, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2604, 3476, 364}

$$\frac{(a\cot(e+fx))^m (b\tan(e+fx))^{n+1}\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{bf(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Cot[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((a*Cot[e + f*x])^m*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n)/2, -Tan
[e + f*x]^2]*(b*Tan[e + f*x])^(1 + n))/(b*f*(1 - m + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2604

```
Int[(cot[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Cot[e + f*x])^m*(b*Tan[e + f*x])^m, Int[(b*Tan[e +
 f*x])^(n - m), x], x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[m] &&
 !IntegerQ[n]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int (a\cot(e+fx))^m(b\tan(e+fx))^n\,dx = \left((a\cot(e+fx))^m(b\tan(e+fx))^m\right)\int (b\tan(e+fx))^{-m+n}\,dx$$
$$= \frac{\left(b(a\cot(e+fx))^m(b\tan(e+fx))^m\right)\text{Subst}\left(\int \frac{x^{-m+n}}{b^2+x^2}\,dx, x, b\tan(e+fx)\right.}{f}$$
$$= \frac{(a\cot(e+fx))^m\,{}_2F_1\left(1,\frac{1}{2}(1-m+n);\frac{1}{2}(3-m+n);-\tan^2(e+fx)\right)(b\,t}{bf(1-m+n)}$$

Mathematica [A] time = 0.09, size = 67, normalized size = 0.97

$$\frac{a(a\cot(e+fx))^{m-1}(b\tan(e+fx))^n\,{}_2F_1\left(1,\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);-\tan^2(e+fx)\right)}{f(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Cot[e + f*x])^m*(b*Tan[e + f*x])^n,x]
[Out] (a*(a*Cot[e + f*x])^(-1 + m)*Hypergeometric2F1[1, (1 - m + n)/2, (3 - m + n
)/2, -Tan[e + f*x]^2]*(b*Tan[e + f*x])^n)/(f*(1 - m + n))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\cot\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a*cot(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

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

$$\int \left(a\cot\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*cot(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

maple [F] time = 0.74, size = 0, normalized size = 0.00

$$\int \left(a\cot\left(fx+e\right)\right)^{m} \left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*cot(f*x+e))^m*(b*tan(f*x+e))^n,x)
[Out] int((a*cot(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

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

$$\int \left(a\cot\left(fx+e\right)\right)^{m} \left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((a*cot(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

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

$$\int {\left(a\,\mathrm{cot}\left(e+f\,x\right)\right)}^m\,{\left(b\,\mathrm{tan}\left(e+f\,x\right)\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*cot(e + f*x))^m*(b*tan(e + f*x))^n,x)
[Out] int((a*cot(e + f*x))^m*(b*tan(e + f*x))^n, x)
```

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

$$\int \left(a \cot{\left(e + f x \right)}\right)^{m} \left(b \tan{\left(e + f x \right)}\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*cot(f*x+e))**m*(b*tan(f*x+e))**n,x)
[Out] Integral((a*cot(e + f*x))**m*(b*tan(e + f*x))**n, x)
```

3.226 $\int \sec^6(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=67

$$\frac{2(d\tan(e+fx))^{11/2}}{11d^5f}+\frac{4(d\tan(e+fx))^{7/2}}{7d^3f}+\frac{2(d\tan(e+fx))^{3/2}}{3df}$$

```
[Out] 2/3*(d*tan(f*x+e))^(3/2)/d/f+4/7*(d*tan(f*x+e))^(7/2)/d^3/f+2/11*(d*tan(f*x
+e))^(11/2)/d^5/f
```

Rubi [A] time = 0.05, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 270}

$$\frac{2(d\tan(e+fx))^{11/2}}{11d^5f}+\frac{4(d\tan(e+fx))^{7/2}}{7d^3f}+\frac{2(d\tan(e+fx))^{3/2}}{3df}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^6*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(d*Tan[e + f*x])^(3/2))/(3*d*f) + (4*(d*Tan[e + f*x])^(7/2))/(7*d^3*f) +
 (2*(d*Tan[e + f*x])^(11/2))/(11*d^5*f)
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \sec^6(e+fx)\sqrt{d\tan(e+fx)}\,dx = \frac{\text{Subst}\left(\int \sqrt{dx}\,(1+x^2)^2\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \left(\sqrt{dx}+\frac{2(dx)^{5/2}}{d^2}+\frac{(dx)^{9/2}}{d^4}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{2(d\tan(e+fx))^{3/2}}{3df}+\frac{4(d\tan(e+fx))^{7/2}}{7d^3f}+\frac{2(d\tan(e+fx))^{11/2}}{11d^5f}$$

Mathematica [A] time = 0.20, size = 52, normalized size = 0.78

$$\frac{2(28\cos(2(e+fx))+4\cos(4(e+fx))+45)\sec^4(e+fx)(d\tan(e+fx))^{3/2}}{231df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^6*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(45 + 28*Cos[2*(e + f*x)] + 4*Cos[4*(e + f*x)])*Sec[e + f*x]^4*(d*Tan[e
+ f*x])^(3/2))/(231*d*f)
```

fricas [A] time = 0.64, size = 59, normalized size = 0.88

$$\frac{2\left(32\cos\left(fx+e\right)^4+24\cos\left(fx+e\right)^2+21\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)}{231\,f\cos\left(fx+e\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^6*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 2/231*(32*cos(f*x + e)^4 + 24*cos(f*x + e)^2 + 21)*sqrt(d*sin(f*x + e)/cos(
f*x + e))*sin(f*x + e)/(f*cos(f*x + e)^5)
```

giac [A] time = 0.65, size = 82, normalized size = 1.22

$$\frac{2\left(21\sqrt{d\tan\left(fx+e\right)}\,d^5\tan\left(fx+e\right)^5+66\sqrt{d\tan\left(fx+e\right)}\,d^5\tan\left(fx+e\right)^3+77\sqrt{d\tan\left(fx+e\right)}\,d^5\tan\left(fx+e\right.}{231\,d^5f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^6*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] 2/231*(21*sqrt(d*tan(f*x + e))*d^5*tan(f*x + e)^5 + 66*sqrt(d*tan(f*x + e))
*d^5*tan(f*x + e)^3 + 77*sqrt(d*tan(f*x + e))*d^5*tan(f*x + e))/(d^5*f)
```

maple [A] time = 0.73, size = 60, normalized size = 0.90

$$\frac{2\left(32\left(\cos^{4}\left(fx+e\right)\right)+24\left(\cos^{2}\left(fx+e\right)\right)+21\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)}{231f\cos\left(fx+e\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^6*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/231/f*(32*cos(f*x+e)^4+24*cos(f*x+e)^2+21)*(d*sin(f*x+e)/cos(f*x+e))^(1/2
)*sin(f*x+e)/cos(f*x+e)^5
```

maxima [A] time = 0.32, size = 51, normalized size = 0.76

$$\frac{2\left(21\left(d\tan\left(fx+e\right)\right)^{\frac{11}{2}}+66\left(d\tan\left(fx+e\right)\right)^{\frac{7}{2}}d^{2}+77\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}d^{4}\right)}{231\,d^{5}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^6*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 2/231*(21*(d*tan(f*x + e))^(11/2) + 66*(d*tan(f*x + e))^(7/2)*d^2 + 77*(d*t
an(f*x + e))^(3/2)*d^4)/(d^5*f)
```

mupad [B] time = 7.24, size = 334, normalized size = 4.99

$$-\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,64i}{231\,f}-\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,64i}{231\,f\left(e^{e\,2i+f\,x\,2i}+1\right)}-\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,32i}{77\,f\left(e^{e\,2i+f\,x\,2i}+1\right)^{2}}+\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,768i}{77\,f\left(e^{e\,2i+f\,x\,2i}+1\right)^{3}}-\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2\cdots}\right.}{e^{e\,2i+f\,x\,2\cdots}}}}{11\,f\left(e^{e\,2i+f\cdots}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/cos(e + f*x)^6,x)
```

```
[Out] ((-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*768i)/(
77*f*(exp(e*2i + f*x*2i) + 1)^3) - ((-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp
(e*2i + f*x*2i) + 1))^(1/2)*64i)/(231*f*(exp(e*2i + f*x*2i) + 1)) - ((-(d*(
exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*32i)/(77*f*(ex
```

```
p(e*2i + f*x*2i) + 1)^2) - ((-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i +
f*x*2i) + 1))^(1/2)*64i)/(231*f) - ((-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp
(e*2i + f*x*2i) + 1))^(1/2)*160i)/(11*f*(exp(e*2i + f*x*2i) + 1)^4) + ((-(d
*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*64i)/(11*f*(
exp(e*2i + f*x*2i) + 1)^5)
```

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

$$\int \sqrt{d \tan \left(e + fx\right)} \sec^6 \left(e + fx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**6*(d*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(e + f*x))*sec(e + f*x)**6, x)
```

3.227 $\int \sec^4(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=45

$$\frac{2(d\tan(e+fx))^{7/2}}{7d^3f}+\frac{2(d\tan(e+fx))^{3/2}}{3df}$$

[Out] 2/3*(d*tan(f*x+e))^(3/2)/d/f+2/7*(d*tan(f*x+e))^(7/2)/d^3/f

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 14}

$$\frac{2(d\tan(e+fx))^{7/2}}{7d^3f}+\frac{2(d\tan(e+fx))^{3/2}}{3df}$$

Antiderivative was successfully verified.

[In] Int[Sec[e + f*x]^4*Sqrt[d*Tan[e + f*x]],x]

[Out] (2*(d*Tan[e + f*x])^(3/2))/(3*d*f) + (2*(d*Tan[e + f*x])^(7/2))/(7*d^3*f)

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \sec^4(e+fx)\sqrt{d\tan(e+fx)}\,dx = \frac{\text{Subst}\left(\int \sqrt{dx}\,\left(1+x^2\right)\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \left(\sqrt{dx} + \frac{(dx)^{5/2}}{d^2}\right)\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{2(d\tan(e+fx))^{3/2}}{3df} + \frac{2(d\tan(e+fx))^{7/2}}{7d^3f}$$

Mathematica [A] time = 0.15, size = 34, normalized size = 0.76

$$\frac{2\left(3\sec^2(e+fx)+4\right)(d\tan(e+fx))^{3/2}}{21df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^4*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(4 + 3*Sec[e + f*x]^2)*(d*Tan[e + f*x])^(3/2))/(21*d*f)
```

fricas [A] time = 0.63, size = 49, normalized size = 1.09

$$\frac{2\left(4\cos\left(fx+e\right)^2+3\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)}{21\,f\cos\left(fx+e\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^4*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 2/21*(4*cos(f*x + e)^2 + 3)*sqrt(d*sin(f*x + e)/cos(f*x + e))*sin(f*x + e)/
(f*cos(f*x + e)^3)
```

giac [A] time = 0.62, size = 57, normalized size = 1.27

$$\frac{2\left(3\sqrt{d\tan\left(fx+e\right)}\,d^3\tan\left(fx+e\right)^3+7\sqrt{d\tan\left(fx+e\right)}\,d^3\tan\left(fx+e\right)\right)}{21\,d^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^4*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] 2/21*(3*sqrt(d*tan(f*x + e))*d^3*tan(f*x + e)^3 + 7*sqrt(d*tan(f*x + e))*d^
3*tan(f*x + e))/(d^3*f)
```

maple [A] time = 0.61, size = 50, normalized size = 1.11

$$\frac{2\left(4\left(\cos^2\left(fx+e\right)\right)+3\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)}{21f\cos\left(fx+e\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^4*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/21/f*(4*cos(f*x+e)^2+3)*(d*sin(f*x+e)/cos(f*x+e))^(1/2)*sin(f*x+e)/cos(f*
x+e)^3
```

maxima [A] time = 0.33, size = 36, normalized size = 0.80

$$\frac{2\left(3\left(d\tan\left(fx+e\right)\right)^{\frac{7}{2}}+7\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}d^2\right)}{21\,d^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^4*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 2/21*(3*(d*tan(f*x + e))^(7/2) + 7*(d*tan(f*x + e))^(3/2)*d^2)/(d^3*f)
```

mupad [B] time = 6.09, size = 218, normalized size = 4.84

$$-\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\ 8i}{21\,f}-\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\ 8i}{21\,f\,\left(e^{e\,2i+f\,x\,2i}+1\right)}+\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\ 24i}{7\,f\,\left(e^{e\,2i+f\,x\,2i}+1\right)^2}-\frac{\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\ 16i}{7\,f\,\left(e^{e\,2i+f\,x\,2i}+1\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/cos(e + f*x)^4,x)
```

```
[Out] ((-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*24i)/(7
*f*(exp(e*2i + f*x*2i) + 1)^2) - ((-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e
*2i + f*x*2i) + 1))^(1/2)*8i)/(21*f*(exp(e*2i + f*x*2i) + 1)) - ((-(d*(exp(
e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*8i)/(21*f) - ((-(d
*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*16i)/(7*f*(e
xp(e*2i + f*x*2i) + 1)^3)
```

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

$$\int \sqrt{d \tan \left(e + f x\right)} \sec^4 \left(e + f x\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**4*(d*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(e + f*x))*sec(e + f*x)**4, x)
```

3.228 $\int \sec^2(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=22

$$\frac{2(d\tan(e+fx))^{3/2}}{3df}$$

```
[Out] 2/3*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.04, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 32}

$$\frac{2(d\tan(e+fx))^{3/2}}{3df}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^2*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(d*Tan[e + f*x])^(3/2))/(3*d*f)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m + 1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] && !(IntegerQ[(n - 1)/2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\begin{aligned}\int \sec^2(e+fx)\sqrt{d\tan(e+fx)}\,dx &= \frac{\text{Subst}\left(\int \sqrt{dx}\,dx, x, \tan(e+fx)\right)}{f}\\ &= \frac{2(d\tan(e+fx))^{3/2}}{3df}\end{aligned}$$

Mathematica [A] time = 0.04, size = 22, normalized size = 1.00

$$\frac{2(d\tan(e+fx))^{3/2}}{3df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^2*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(d*Tan[e + f*x])^(3/2))/(3*d*f)
```

fricas [B] time = 0.42, size = 37, normalized size = 1.68

$$\frac{2\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)}{3f\cos\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^2*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(d*sin(f*x + e)/cos(f*x + e))*sin(f*x + e)/(f*cos(f*x + e))
```

giac [A] time = 0.49, size = 23, normalized size = 1.05

$$\frac{2\sqrt{d\tan\left(fx+e\right)}\tan\left(fx+e\right)}{3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^2*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] 2/3*sqrt(d*tan(f*x + e))*tan(f*x + e)/f
```

maple [A] time = 0.15, size = 19, normalized size = 0.86

$$\frac{2\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{3df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^2*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/3*(d*tan(f*x+e))^(3/2)/d/f
```

maxima [A] time = 0.46, size = 18, normalized size = 0.82

$$\frac{2\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{3df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^2*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(d*tan(f*x + e))^(3/2)/(d*f)
```

mupad [B] time = 2.57, size = 53, normalized size = 2.41

$$\frac{2\,\sin\left(2\,e+2\,f\,x\right)\,\sqrt{\frac{d\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{3\,f\,\left(\cos\left(2\,e+2\,f\,x\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/cos(e + f*x)^2,x)
```

```
[Out] (2*sin(2*e + 2*f*x)*((d*sin(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(3
*f*(cos(2*e + 2*f*x) + 1))
```

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

$$\int \sqrt{d\tan\left(e+fx\right)}\,\sec^{2}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**2*(d*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(e + f*x))*sec(e + f*x)**2, x)
```

3.229 $\int \sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=192

$$-\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f}+\frac{\sqrt{d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right.}{2\sqrt{2}f}$$

```
[Out] -1/2*arctan(1-2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/2*a
rctan(1+2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/4*ln(d^(1
/2)-2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))*d^(1/2)/f*2^(1/2)-1/4*
ln(d^(1/2)+2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))*d^(1/2)/f*2^(1/
2)
```

Rubi [A] time = 0.11, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {3476, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f}+\frac{\sqrt{d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right.}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] -((Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f))
 + (Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f)
 + (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] - Sqrt[2]*Sqrt[d*Tan[e + f*x
]]])/(2*Sqrt[2]*f) - (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] + Sqrt[2]*
Sqrt[d*Tan[e + f*x]]])/(2*Sqrt[2]*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
```

```
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int \sqrt{d\tan(e+fx)}\,dx = \frac{d\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\tan(e+fx)\right)}{f}$$
$$= \frac{(2d)\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{f}$$
$$= -\frac{d\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{f} + \frac{d\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{f}$$
$$= \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{2\sqrt{2}f} + \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}-2x}{-d+\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d}\right.}{2\sqrt{2}f}$$
$$= \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right)}{2\sqrt{2}f} - \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\tan(e+fx)\right.}{2\sqrt{2}f}$$
$$= -\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} + \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\,\text{t}\right.}{}$$

Mathematica [C] time = 0.04, size = 40, normalized size = 0.21

$$\frac{2(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\tan^2(e+fx)\right)}{3df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Tan[e + f*x]],x]
[Out] (2*Hypergeometric2F1[3/4, 1, 7/4, -Tan[e + f*x]^2]*(d*Tan[e + f*x])^(3/2))/
(3*d*f)
```

fricas [B] time = 0.59, size = 519, normalized size = 2.70

$$-\sqrt{2}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}df\sqrt{\frac{d\sin(fx+e)}{\cos(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{1}{4}} - \sqrt{2}f\sqrt{\frac{\sqrt{2}df^3\sqrt{\frac{d\sin(fx+e)}{\cos(fx+e)}}\left(\frac{d^2}{f^4}\right)^{\frac{3}{4}}\cos(fx+e)+d^2f^2\sqrt{\frac{d^2}{f^4}}\cos(fx+e)+d^3\sin(fx+\right.}{\cos(fx+e)}}}{d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] -sqrt(2)*(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*d*f*sqrt(d*sin(f*x + e)/cos(f*x +
 e))*(d^2/f^4)^(1/4) - sqrt(2)*f*sqrt((sqrt(2)*d*f^3*sqrt(d*sin(f*x + e)/co
s(f*x + e))*(d^2/f^4)^(3/4)*cos(f*x + e) + d^2*f^2*sqrt(d^2/f^4)*cos(f*x +
e) + d^3*sin(f*x + e))/cos(f*x + e))*(d^2/f^4)^(1/4) + d^2)/d^2) - sqrt(2)*
(d^2/f^4)^(1/4)*arctan(-(sqrt(2)*d*f*sqrt(d*sin(f*x + e)/cos(f*x + e))*(d^2
/f^4)^(1/4) - sqrt(2)*f*sqrt(-(sqrt(2)*d*f^3*sqrt(d*sin(f*x + e)/cos(f*x +
e))*(d^2/f^4)^(3/4)*cos(f*x + e) - d^2*f^2*sqrt(d^2/f^4)*cos(f*x + e) - d^3
*sin(f*x + e))/cos(f*x + e))*(d^2/f^4)^(1/4) - d^2)/d^2) - 1/4*sqrt(2)*(d^2
/f^4)^(1/4)*log((sqrt(2)*d*f^3*sqrt(d*sin(f*x + e)/cos(f*x + e))*(d^2/f^4)^
(3/4)*cos(f*x + e) + d^2*f^2*sqrt(d^2/f^4)*cos(f*x + e) + d^3*sin(f*x + e))
/cos(f*x + e)) + 1/4*sqrt(2)*(d^2/f^4)^(1/4)*log(-(sqrt(2)*d*f^3*sqrt(d*sin
(f*x + e)/cos(f*x + e))*(d^2/f^4)^(3/4)*cos(f*x + e) - d^2*f^2*sqrt(d^2/f^4
)*cos(f*x + e) - d^3*sin(f*x + e))/cos(f*x + e))
```

giac [A] time = 0.42, size = 182, normalized size = 0.95

$$\frac{\frac{2\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(fx+e)}\right)}{2\sqrt{|d|}}\right)}{f}+\frac{2\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(fx+e)}\right)}{2\sqrt{|d|}}\right)}{f}-\frac{\sqrt{2}|d|^{\frac{3}{2}}\log\left(d\tan(fx+e)+\sqrt{2}\sqrt{d\tan(fx+e)}\right.}{f}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(2*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sq
rt(d*tan(f*x + e)))/sqrt(abs(d)))/f + 2*sqrt(2)*abs(d)^(3/2)*arctan(-1/2*sq
rt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(f*x + e)))/sqrt(abs(d)))/f - sqr
t(2)*abs(d)^(3/2)*log(d*tan(f*x + e) + sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(ab
s(d)) + abs(d))/f + sqrt(2)*abs(d)^(3/2)*log(d*tan(f*x + e) - sqrt(2)*sqrt(
d*tan(f*x + e))*sqrt(abs(d)) + abs(d))/f)/d
```

maple [A] time = 0.08, size = 160, normalized size = 0.83

$$\frac{d\sqrt{2}\,\ln\left(\frac{d\tan(fx+e)-(d^2)^{\frac{1}{4}}\sqrt{d\tan(fx+e)}\,\sqrt{2}+\sqrt{d^2}}{d\tan(fx+e)+(d^2)^{\frac{1}{4}}\sqrt{d\tan(fx+e)}\,\sqrt{2}+\sqrt{d^2}}\right)}{4f\,(d^2)^{\frac{1}{4}}}+\frac{d\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,\sqrt{d\tan(fx+e)}}{(d^2)^{\frac{1}{4}}}+1\right)}{2f\,(d^2)^{\frac{1}{4}}}-\frac{d\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\,\sqrt{d\tan(fx+e}}{(d^2)^{\frac{1}{4}}}\right.}{2f\,(d^2)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/4/f*d/(d^2)^(1/4)*2^(1/2)*ln((d*tan(f*x+e)-(d^2)^(1/4)*(d*tan(f*x+e))^(1/
2)*2^(1/2)+(d^2)^(1/2))/(d*tan(f*x+e)+(d^2)^(1/4)*(d*tan(f*x+e))^(1/2)*2^(1
/2)+(d^2)^(1/2)))+1/2/f*d/(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(d
*tan(f*x+e))^(1/2)+1)-1/2/f*d/(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/
4)*(d*tan(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.86, size = 153, normalized size = 0.80

$$\frac{d\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan\left(fx+e\right)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan\left(fx+e\right)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(d\tan\left(fx+e\right)+\sqrt{2}\sqrt{d\tan\left(fx+e\right)}\sqrt{d}+d\right)}{\sqrt{d}}+\frac{\sqrt{}}{}\right.}{4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*d*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(f*x + e
)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*s
qrt(d*tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(f*x + e) + sqrt(2
)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(f*x + e) -
sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d))/f
```

mupad [B] time = 2.50, size = 49, normalized size = 0.26

$$\frac{(-1)^{1/4}\sqrt{d}\left(\operatorname{atan}\left(\frac{(-1)^{1/4}\sqrt{d\tan\left(e+fx\right)}}{\sqrt{d}}\right)-\operatorname{atanh}\left(\frac{(-1)^{1/4}\sqrt{d\tan\left(e+fx\right)}}{\sqrt{d}}\right)\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2),x)
```

```
[Out] ((-1)^(1/4)*d^(1/2)*(atan(((-1)^(1/4)*(d*tan(e + f*x))^(1/2))/d^(1/2)) - at
anh(((-1)^(1/4)*(d*tan(e + f*x))^(1/2))/d^(1/2))))/f
```

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

$$\int\sqrt{d\tan\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(e + f*x)), x)
```

3.230 $\int \cos^2(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=227

$$-\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f}+\frac{\sqrt{d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right.}{8\sqrt{2}f}$$

```
[Out] -1/8*arctan(1-2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/8*a
rctan(1+2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))*d^(1/2)/f*2^(1/2)+1/16*ln(d^(
1/2)-2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))*d^(1/2)/f*2^(1/2)-1/1
6*ln(d^(1/2)+2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))*d^(1/2)/f*2^(
1/2)+1/2*cos(f*x+e)^2*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.17, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2607, 290, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f}+\frac{\sqrt{d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}f}+\frac{\sqrt{d}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right.}{8\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]^2*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] -(Sqrt[d]*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(4*Sqrt[2]*f)
 + (Sqrt[d]*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(4*Sqrt[2]*
f) + (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] - Sqrt[2]*Sqrt[d*Tan[e + f
*x]]])/(8*Sqrt[2]*f) - (Sqrt[d]*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] + Sqrt[2
]*Sqrt[d*Tan[e + f*x]]])/(8*Sqrt[2]*f) + (Cos[e + f*x]^2*(d*Tan[e + f*x])^(
3/2))/(2*d*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
```

]

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \cos^2(e+fx)\sqrt{d\tan(e+fx)}\,dx = \frac{\text{Subst}\left(\int \frac{\sqrt{dx}}{\left(1+x^2\right)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= \frac{\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2df} + \frac{\text{Subst}\left(\int \frac{\sqrt{dx}}{1+x^2}\,dx, x, \tan(e+fx)\right)}{4f}$$

$$= \frac{\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2df} + \frac{\text{Subst}\left(\int \frac{x^2}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{2df}$$

$$= \frac{\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2df} - \frac{\text{Subst}\left(\int \frac{d-x^2}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{4df} + \cdots$$

$$= \frac{\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2df} + \frac{\sqrt{d}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\tan(\cdots}\right.}{8\sqrt{2}f}$$

$$= \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right)}{8\sqrt{2}f} - \frac{\sqrt{d}\log\left(\sqrt{d}+\sqrt{\cdots}\right.}{\cdots}$$

$$= -\frac{\sqrt{d}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f} + \frac{\sqrt{d}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f} + \frac{\sqrt{d}\log\cdots}{\cdots}$$

Mathematica [A] time = 0.19, size = 102, normalized size = 0.45

$$-\frac{\sqrt{\sin(2(e+fx))}\sqrt{d\tan(e+fx)}\left(-2\sqrt{\sin(2(e+fx))}+\csc(e+fx)\sin^{-1}(\cos(e+fx)-\sin(e+fx))+\csc(e+\cdots\right.}{8f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]^2*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] -1/8*((ArcSin[Cos[e + f*x] - Sin[e + f*x]]*Csc[e + f*x] + Csc[e + f*x]*Log[
Cos[e + f*x] + Sin[e + f*x] + Sqrt[Sin[2*(e + f*x)]]] - 2*Sqrt[Sin[2*(e + f
*x)]])*Sqrt[Sin[2*(e + f*x)]]*Sqrt[d*Tan[e + f*x]])/f
```

fricas [B] time = 110.91, size = 1897, normalized size = 8.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^2*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] 1/64*(4*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan((sqrt(4*d^3*f^2*sqrt(d^2/f^4)*cos(
f*x + e)*sin(f*x + e) + d^4 - 2*(sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(f*x +
e)*sin(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2)*sqrt(d*sin(
f*x + e)/cos(f*x + e)))*(2*d^2*cos(f*x + e)*sin(f*x + e) + d*f^2*sqrt(d^2/f
^4) + (sqrt(2)*f^3*(d^2/f^4)^(3/4)*cos(f*x + e)^2 + sqrt(2)*d*f*(d^2/f^4)^(
1/4)*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))) + (sqrt(
2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(f*x + e)*sin(f*x + e) + sqrt(2)*d^3*f*(d^2/f
^4)^(1/4)*cos(f*x + e)^2)*sqrt(d*sin(f*x + e)/cos(f*x + e)))/(2*d^4*cos(f*x
 + e)^2 - d^4)) + 4*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-(sqrt(4*d^3*f^2*sqrt(
d^2/f^4)*cos(f*x + e)*sin(f*x + e) + d^4 + 2*(sqrt(2)*d^2*f^3*(d^2/f^4)^(3/
4)*cos(f*x + e)*sin(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2
)*sqrt(d*sin(f*x + e)/cos(f*x + e)))*(2*d^2*cos(f*x + e)*sin(f*x + e) + d*f
^2*sqrt(d^2/f^4) - (sqrt(2)*f^3*(d^2/f^4)^(3/4)*cos(f*x + e)^2 + sqrt(2)*d*
f*(d^2/f^4)^(1/4)*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x +
e))) - (sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(f*x + e)*sin(f*x + e) + sqrt(2)
*d^3*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2)*sqrt(d*sin(f*x + e)/cos(f*x + e)))/(
2*d^4*cos(f*x + e)^2 - d^4)) + 4*sqrt(2)*f*(d^2/f^4)^(1/4)*arctan(-1/2*(2*d
^4*sin(f*x + e) - sqrt(4*d^3*f^2*sqrt(d^2/f^4)*cos(f*x + e)*sin(f*x + e) +
d^4 + 2*(sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(f*x + e)*sin(f*x + e) + sqrt(2
)*d^3*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2)*sqrt(d*sin(f*x + e)/cos(f*x + e)))*
(sqrt(2)*f^3*(d^2/f^4)^(3/4)*cos(f*x + e) + sqrt(2)*d*f*(d^2/f^4)^(1/4)*sin
(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)) + (sqrt(2)*d^2*f^3*(d^2/f^4)^(
3/4)*cos(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(1/4)*sin(f*x + e))*sqrt(d*sin(
f*x + e)/cos(f*x + e)) - 4*(d^3*f^2*cos(f*x + e)^3 - d^3*f^2*cos(f*x + e))*
sqrt(d^2/f^4))/((2*d^4*cos(f*x + e)^2 - d^4)*sin(f*x + e))) + 4*sqrt(2)*f*(
d^2/f^4)^(1/4)*arctan(1/2*(2*d^4*sin(f*x + e) + sqrt(4*d^3*f^2*sqrt(d^2/f^4
)*cos(f*x + e)*sin(f*x + e) + d^4 - 2*(sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(
f*x + e)*sin(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2)*sqrt(
d*sin(f*x + e)/cos(f*x + e)))*(sqrt(2)*f^3*(d^2/f^4)^(3/4)*cos(f*x + e) + s
qrt(2)*d*f*(d^2/f^4)^(1/4)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))
- (sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(
1/4)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)) - 4*(d^3*f^2*cos(f*x +
```

```
 e)^3 - d^3*f^2*cos(f*x + e))*sqrt(d^2/f^4))/((2*d^4*cos(f*x + e)^2 - d^4)*
sin(f*x + e))) - sqrt(2)*f*(d^2/f^4)^(1/4)*log(4*d^3*f^2*sqrt(d^2/f^4)*cos(
f*x + e)*sin(f*x + e) + d^4 + 2*(sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(f*x +
e)*sin(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2)*sqrt(d*sin(
f*x + e)/cos(f*x + e))) + sqrt(2)*f*(d^2/f^4)^(1/4)*log(4*d^3*f^2*sqrt(d^2/
f^4)*cos(f*x + e)*sin(f*x + e) + d^4 - 2*(sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*c
os(f*x + e)*sin(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(1/4)*cos(f*x + e)^2)*sq
rt(d*sin(f*x + e)/cos(f*x + e))) - sqrt(2)*f*(d^2/f^4)^(1/4)*log(1/4*d^3*f^
2*sqrt(d^2/f^4)*cos(f*x + e)*sin(f*x + e) + 1/16*d^4 + 1/8*(sqrt(2)*d^2*f^3
*(d^2/f^4)^(3/4)*cos(f*x + e)*sin(f*x + e) + sqrt(2)*d^3*f*(d^2/f^4)^(1/4)*
cos(f*x + e)^2)*sqrt(d*sin(f*x + e)/cos(f*x + e))) + sqrt(2)*f*(d^2/f^4)^(1
/4)*log(1/4*d^3*f^2*sqrt(d^2/f^4)*cos(f*x + e)*sin(f*x + e) + 1/16*d^4 - 1/
8*(sqrt(2)*d^2*f^3*(d^2/f^4)^(3/4)*cos(f*x + e)*sin(f*x + e) + sqrt(2)*d^3*
f*(d^2/f^4)^(1/4)*cos(f*x + e)^2)*sqrt(d*sin(f*x + e)/cos(f*x + e))) + 32*s
qrt(d*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e))/f
```

giac [A] time = 0.56, size = 227, normalized size = 1.00

$$\frac{\frac{8\sqrt{d\tan\left(fx+e\right)}\,d^{3}\tan\left(fx+e\right)}{\left(d^{2}\tan\left(fx+e\right)^{2}+d^{2}\right)f}+\frac{2\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan\left(fx+e\right)}\right)}{2\sqrt{|d|}}\right)}{f}+\frac{2\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan\left(fx+e\right)}\right)}{2\sqrt{|d|}}\right)}{f}-\sqrt{2}\,|d|^{\frac{3}{2}}\log(\cdots}{16\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^2*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] 1/16*(8*sqrt(d*tan(f*x + e))*d^3*tan(f*x + e)/((d^2*tan(f*x + e)^2 + d^2)*f
) + 2*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sqr
t(d*tan(f*x + e)))/sqrt(abs(d)))/f + 2*sqrt(2)*abs(d)^(3/2)*arctan(-1/2*sqr
t(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(f*x + e)))/sqrt(abs(d)))/f - sqrt
(2)*abs(d)^(3/2)*log(d*tan(f*x + e) + sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(abs
(d)) + abs(d))/f + sqrt(2)*abs(d)^(3/2)*log(d*tan(f*x + e) - sqrt(2)*sqrt(d
*tan(f*x + e))*sqrt(abs(d)) + abs(d))/f)/d
```

maple [C] time = 0.56, size = 522, normalized size = 2.30

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(i\,\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)^2*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/8/f*(-1+cos(f*x+e))*(I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e)
)^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(
f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e
))^(1/2)-I*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/
2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x
+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+Ellip
ticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))
*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))
^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+EllipticPi((-(-sin(f*
x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e)
)/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f
*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*cos(f*x+e)^2*2^(1/2)-2*cos(f*x+e)*2
^(1/2))*(1+cos(f*x+e))^2*(d*sin(f*x+e)/cos(f*x+e))^(1/2)/sin(f*x+e)^3*2^(1/
2)
```

maxima [A] time = 0.75, size = 193, normalized size = 0.85

$$\frac{d^2\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan\left(fx+e\right)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan\left(fx+e\right)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\log\left(d\tan\left(fx+e\right)+\sqrt{2}\sqrt{d\tan\left(fx+e\right)}\sqrt{d}+d\right)}{\sqrt{d}}+\cdots\right.}{16\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^2*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] 1/16*(d^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(f*x
 + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) -
 2*sqrt(d*tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(f*x + e) + sq
rt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(f*x + e
) - sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d)) + 8*(d*tan(f*x + e))
^(3/2)*d^2/(d^2*tan(f*x + e)^2 + d^2))/(d*f)
```

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

$$\int \cos\left(e+f\,x\right)^2\,\sqrt{d\,\tan\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)^2*(d*tan(e + f*x))^(1/2),x)
```

```
[Out] int(cos(e + f*x)^2*(d*tan(e + f*x))^(1/2), x)
```

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

$$\int \sqrt{d\tan\left(e+fx\right)}\cos^2\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)**2*(d*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(e + f*x))*cos(e + f*x)**2, x)
```

3.231 $\int \sec^3(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=107

$$\frac{4\cos(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{2\sec(e+fx)(d\tan(e+fx))^{3/2}}{5df}-\frac{4\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{5f\sqrt{\sin(2e+2fx)}}$$

```
[Out] 4/5*cos(f*x+e)*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticE(cos(
e+1/4*Pi+f*x),2^(1/2))*(d*tan(f*x+e))^(1/2)/f/sin(2*f*x+2*e)^(1/2)+4/5*cos(
f*x+e)*(d*tan(f*x+e))^(3/2)/d/f+2/5*sec(f*x+e)*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.13, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2613, 2615, 2572, 2639}

$$\frac{4\cos(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{2\sec(e+fx)(d\tan(e+fx))^{3/2}}{5df}-\frac{4\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{5f\sqrt{\sin(2e+2fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^3*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (-4*Cos[e + f*x]*EllipticE[e - Pi/4 + f*x, 2]*Sqrt[d*Tan[e + f*x]])/(5*f*Sq
rt[Sin[2*e + 2*f*x]]) + (4*Cos[e + f*x]*(d*Tan[e + f*x])^(3/2))/(5*d*f) + (
2*Sec[e + f*x]*(d*Tan[e + f*x])^(3/2))/(5*d*f)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
```

```
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \sec^3(e+fx)\sqrt{d\tan(e+fx)}\,dx &= \frac{2\sec(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{2}{5}\int \sec(e+fx)\sqrt{d\tan(e+fx)}\,dx\\ &= \frac{4\cos(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{2\sec(e+fx)(d\tan(e+fx))^{3/2}}{5df}-\frac{4}{5}\int \mathrm{co}\\ &= \frac{4\cos(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{2\sec(e+fx)(d\tan(e+fx))^{3/2}}{5df}-\frac{\left(4\sqrt{\mathrm{co}}\right.}{}\\ &= \frac{4\cos(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{2\sec(e+fx)(d\tan(e+fx))^{3/2}}{5df}-\frac{\left(4\cos(\right.}{}\\ &= -\frac{4\cos(e+fx)E\left(e-\frac{\pi}{4}+fx\middle|2\right)\sqrt{d\tan(e+fx)}}{5f\sqrt{\sin(2e+2fx)}}+\frac{4\cos(e+fx)(d\tan(e+}{5df}\end{aligned}$$

Mathematica [C] time = 0.44, size = 102, normalized size = 0.95

$$\frac{2\sqrt{d\tan(e+fx)}\left(3\sqrt{\sec^2(e+fx)}\,(2\sin(e+fx)+\tan(e+fx)\sec(e+fx))-4\tan(e+fx)\sec(e+fx)\,{}_2F_1\left(\frac{3}{4},\right.\right.}{15f\sqrt{\sec^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^3*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*Sqrt[d*Tan[e + f*x]]*(-4*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[e + f*x]^
2]*Sec[e + f*x]*Tan[e + f*x] + 3*Sqrt[Sec[e + f*x]^2]*(2*Sin[e + f*x] + Sec
[e + f*x]*Tan[e + f*x])))/(15*f*Sqrt[Sec[e + f*x]^2])
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(fx+e\right)}\,\sec\left(fx+e\right)^3,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^3*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*sec(f*x + e)^3, x)
```

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

$$\int \sqrt{d \tan\left(fx+e\right)} \sec\left(fx+e\right)^{3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^3*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(f*x + e))*sec(f*x + e)^3, x)
```

maple [B] time = 0.57, size = 559, normalized size = 5.22

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)^{2}\left(2\left(\cos^{3}\left(fx+e\right)\right)\mathrm{EllipticF}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\cdots}{\sin\left(fx+\cdots\right)}}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^3*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/5/f*(-1+cos(f*x+e))^2*(2*cos(f*x+e)^3*EllipticF((-(-sin(f*x+e)-1+cos(f*x
+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1
+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(
f*x+e))^(1/2)-4*cos(f*x+e)^3*EllipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x
+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+
sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2
)+2*cos(f*x+e)^2*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1
/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/
sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-4*cos(f*x+
e)^2*EllipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*
((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^
(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*cos(f*x+e)^3*2^(1/2)
-cos(f*x+e)^2*2^(1/2)-2^(1/2))*(d*sin(f*x+e)/cos(f*x+e))^(1/2)*(1+cos(f*x+e
))^2/cos(f*x+e)^2/sin(f*x+e)^5*2^(1/2)
```

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

$$\int \sqrt{d \tan\left(fx+e\right)} \sec\left(fx+e\right)^{3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^3*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))*sec(f*x + e)^3, x)
```

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

$$\int \frac{\sqrt{d\tan\left(e+f\,x\right)}}{\cos\left(e+f\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/cos(e + f*x)^3,x)
[Out] int((d*tan(e + f*x))^(1/2)/cos(e + f*x)^3, x)
```

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

$$\int \sqrt{d\tan\left(e+fx\right)}\sec^3\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**3*(d*tan(f*x+e))**(1/2),x)
[Out] Integral(sqrt(d*tan(e + f*x))*sec(e + f*x)**3, x)
```

3.232 $\int \sec(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=75

$$\frac{2\cos(e+fx)(d\tan(e+fx))^{3/2}}{df}-\frac{2\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{f\sqrt{\sin(2e+2fx)}}$$

```
[Out] 2*cos(f*x+e)*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticE(cos(e+
1/4*Pi+f*x),2^(1/2))*(d*tan(f*x+e))^(1/2)/f/sin(2*f*x+2*e)^(1/2)+2*cos(f*x+
e)*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2613, 2615, 2572, 2639}

$$\frac{2\cos(e+fx)(d\tan(e+fx))^{3/2}}{df}-\frac{2\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{f\sqrt{\sin(2e+2fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (-2*Cos[e + f*x]*EllipticE[e - Pi/4 + f*x, 2]*Sqrt[d*Tan[e + f*x]])/(f*Sqrt
[Sin[2*e + 2*f*x]]) + (2*Cos[e + f*x]*(d*Tan[e + f*x])^(3/2))/(d*f)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
```

```
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \sec(e+fx)\sqrt{d\tan(e+fx)}\,dx &= \frac{2\cos(e+fx)(d\tan(e+fx))^{3/2}}{df} - 2\int \cos(e+fx)\sqrt{d\tan(e+fx)}\,dx\\ &= \frac{2\cos(e+fx)(d\tan(e+fx))^{3/2}}{df} - \frac{\left(2\sqrt{\cos(e+fx)}\sqrt{d\tan(e+fx)}\right)\int \sqrt{\cos(}}{\sqrt{\sin(e+fx)}}\\ &= \frac{2\cos(e+fx)(d\tan(e+fx))^{3/2}}{df} - \frac{\left(2\cos(e+fx)\sqrt{d\tan(e+fx)}\right)\int \sqrt{\sin(2e}}{\sqrt{\sin(2e+2fx)}}\\ &= -\frac{2\cos(e+fx)E\left(e-\frac{\pi}{4}+fx\middle|2\right)\sqrt{d\tan(e+fx)}}{f\sqrt{\sin(2e+2fx)}} + \frac{2\cos(e+fx)(d\tan(e+}{df}\end{aligned}$$

Mathematica [C] time = 0.28, size = 61, normalized size = 0.81

$$-\frac{2\sin(e+fx)\sqrt{d\tan(e+fx)}\left(2\sqrt{\sec^2(e+fx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(e+fx)\right)-3\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (-2*(-3 + 2*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[e + f*x]^2]*Sqrt[Sec[e +
f*x]^2])*Sin[e + f*x]*Sqrt[d*Tan[e + f*x]])/(3*f)
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{d\tan\left(fx+e\right)}\,\sec\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*sec(f*x + e), x)
```

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

$$\int \sqrt{d\tan\left(fx+e\right)}\,\sec\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(f*x + e))*sec(f*x + e), x)
```

maple [B] time = 0.47, size = 513, normalized size = 6.84

$$\frac{\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\left(1+\cos\left(fx+e\right)\right)^{2}\left(-1+\cos\left(fx+e\right)\right)^{2}\left(2\,\mathrm{EllipticE}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\cos\left(fx+e\right)\sqrt{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/f*(d*sin(f*x+e)/cos(f*x+e))^(1/2)*(1+cos(f*x+e))^2*(-1+cos(f*x+e))^2*(2*E
llipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*cos(f*
x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x
+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-EllipticF((-(-sin
(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*cos(f*x+e)*((-1+cos(f*
x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-s
in(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*EllipticE((-(-sin(f*x+e)-1+cos(
f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*(
(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/s
in(f*x+e))^(1/2)-EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1
/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/
sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-cos(f*x+e)
*2^(1/2)+2^(1/2))/sin(f*x+e)^5*2^(1/2)
```

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

$$\int \sqrt{d\tan\left(fx+e\right)}\,\sec\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*tan(f*x + e))*sec(f*x + e), x)
```

<u>**mupad**</u> **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{d\tan\left(e+f\,x\right)}}{\cos\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/cos(e + f*x),x)
```

```
[Out] int((d*tan(e + f*x))^(1/2)/cos(e + f*x), x)
```

<u>**sympy**</u> **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d\tan\left(e+fx\right)}\ \sec\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)*(d*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*tan(e + f*x))*sec(e + f*x), x)
```

3.233 $\int \cos(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=47

$$\frac{\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{f\sqrt{\sin(2e+2fx)}}$$

```
[Out] -cos(f*x+e)*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticE(cos(e+1
/4*Pi+f*x),2^(1/2))*(d*tan(f*x+e))^(1/2)/f/sin(2*f*x+2*e)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2615, 2572, 2639}

$$\frac{\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{f\sqrt{\sin(2e+2fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (Cos[e + f*x]*EllipticE[e - Pi/4 + f*x, 2]*Sqrt[d*Tan[e + f*x]])/(f*Sqrt[Si
n[2*e + 2*f*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cos(e+fx)\sqrt{d\tan(e+fx)}\,dx = \frac{\left(\sqrt{\cos(e+fx)}\sqrt{d\tan(e+fx)}\right)\int\sqrt{\cos(e+fx)}\sqrt{\sin(e+fx)}\,dx}{\sqrt{\sin(e+fx)}}$$
$$= \frac{\left(\cos(e+fx)\sqrt{d\tan(e+fx)}\right)\int\sqrt{\sin(2e+2fx)}\,dx}{\sqrt{\sin(2e+2fx)}}$$
$$= \frac{\cos(e+fx)E\left(e-\frac{\pi}{4}+fx\middle|2\right)\sqrt{d\tan(e+fx)}}{f\sqrt{\sin(2e+2fx)}}$$

Mathematica [C] time = 0.10, size = 57, normalized size = 1.21

$$\frac{2\sin(e+fx)\sqrt{\sec^2(e+fx)}\sqrt{d\tan(e+fx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]*Sqrt[d*Tan[e + f*x]],x]
[Out] (2*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[e + f*x]^2]*Sqrt[Sec[e + f*x]^2]*S
in[e + f*x]*Sqrt[d*Tan[e + f*x]])/(3*f)
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(fx+e\right)}\cos\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(d*tan(f*x + e))*cos(f*x + e), x)
```

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

$$\int\sqrt{d\tan\left(fx+e\right)}\cos\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(d*tan(f*x + e))*cos(f*x + e), x)
```

maple [B] time = 0.50, size = 523, normalized size = 11.13

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)^{2}\left(2\,\mathrm{EllipticE}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\cos\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(\right.}{\sin\left(fx+e\right)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/2/f*(-1+cos(f*x+e))^2*(2*EllipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+
e))^(1/2),1/2*2^(1/2))*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+c
os(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*
x+e))^(1/2)-EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^
(1/2))*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*
x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*El
lipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+co
s(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(
-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-EllipticF((-(-sin(f*x+e)-1+co
s(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)
*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))
/sin(f*x+e))^(1/2)+cos(f*x+e)^2*2^(1/2)-cos(f*x+e)*2^(1/2))*(1+cos(f*x+e))^
2*(d*sin(f*x+e)/cos(f*x+e))^(1/2)/sin(f*x+e)^5*2^(1/2)
```

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

$$\int\sqrt{d\tan\left(fx+e\right)}\,\cos\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*tan(f*x + e))*cos(f*x + e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\cos\left(e+f\,x\right)\,\sqrt{d\,\tan\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)*(d*tan(e + f*x))^(1/2),x)
```

```
[Out] int(cos(e + f*x)*(d*tan(e + f*x))^(1/2), x)
```

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

$$\int \sqrt{d \tan \left(e+fx\right)} \cos \left(e+fx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)*(d*tan(f*x+e))**(1/2),x)
[Out] Integral(sqrt(d*tan(e + f*x))*cos(e + f*x), x)
```

3.234 $\int \cos^3(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=81

$$\frac{\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{3df}+\frac{\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{2f\sqrt{\sin(2e+2fx)}}$$

```
[Out] -1/2*cos(f*x+e)*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticE(cos
(e+1/4*Pi+f*x),2^(1/2))*(d*tan(f*x+e))^(1/2)/f/sin(2*f*x+2*e)^(1/2)+1/3*cos
(f*x+e)^3*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.10, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2612, 2615, 2572, 2639}

$$\frac{\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{3df}+\frac{\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{2f\sqrt{\sin(2e+2fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]^3*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (Cos[e + f*x]*EllipticE[e - Pi/4 + f*x, 2]*Sqrt[d*Tan[e + f*x]])/(2*f*Sqrt[
Sin[2*e + 2*f*x]]) + (Cos[e + f*x]^3*(d*Tan[e + f*x])^(3/2))/(3*d*f)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cos^3(e+fx)\sqrt{d\tan(e+fx)}\,dx = \frac{\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{3df}+\frac{1}{2}\int \cos(e+fx)\sqrt{d\tan(e+fx)}\,dx$$
$$= \frac{\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{3df}+\frac{\left(\sqrt{\cos(e+fx)}\sqrt{d\tan(e+fx)}\right)\int \sqrt{\cos(}}{2\sqrt{\sin(e+fx)}}$$
$$= \frac{\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{3df}+\frac{\left(\cos(e+fx)\sqrt{d\tan(e+fx)}\right)\int \sqrt{\sin(2e}}{2\sqrt{\sin(2e+2fx)}}$$
$$= \frac{\cos(e+fx)E\left(e-\frac{\pi}{4}+fx\middle|2\right)\sqrt{d\tan(e+fx)}}{2f\sqrt{\sin(2e+2fx)}}+\frac{\cos^3(e+fx)(d\tan(e+fx}{3df}$$

Mathematica [C] time = 0.46, size = 94, normalized size = 1.16

$$\frac{\sqrt{d\tan(e+fx)}\left(4\tan(e+fx)\sec(e+fx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(e+fx)\right)+(\sin(e+fx)+\sin(3(e+fx)))\sqrt{\sec^2(e}\right.}{12f\sqrt{\sec^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]^3*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (Sqrt[d*Tan[e + f*x]]*(Sqrt[Sec[e + f*x]^2]*(Sin[e + f*x] + Sin[3*(e + f*x)
]) + 4*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[e + f*x]^2]*Sec[e + f*x]*Tan[e
 + f*x]))/(12*f*Sqrt[Sec[e + f*x]^2])
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(fx+e\right)}\cos\left(fx+e\right)^3,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^3*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*cos(f*x + e)^3, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^3*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
[Out] Timed out
```

maple [B] time = 0.58, size = 537, normalized size = 6.63

$$\frac{\left(-1+\cos\left(fx+e\right)\right)^{2}\left(3\,\mathrm{EllipticF}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\cos\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx\right.}{\sin\left(fx+e\right)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)^3*(d*tan(f*x+e))^(1/2),x)
[Out] 1/12/f*(-1+cos(f*x+e))^2*(3*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+
e))^(1/2),1/2*2^(1/2))*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+c
os(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*
x+e))^(1/2)-6*EllipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*
2^(1/2))*cos(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(
f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2*
cos(f*x+e)^4*2^(1/2)+3*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(
1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*
x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-6*El
lipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+co
s(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(
-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-cos(f*x+e)^2*2^(1/2)+3*cos(f*
x+e)*2^(1/2))*(1+cos(f*x+e))^2*(d*sin(f*x+e)/cos(f*x+e))^(1/2)/sin(f*x+e)^5
*2^(1/2)
```

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

$$\int \sqrt{d\tan\left(fx+e\right)}\,\cos\left(fx+e\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^3*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))*cos(f*x + e)^3, x)
```

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

$$\int \cos\left(e+f\,x\right)^3\,\sqrt{d\,\tan\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)^3*(d*tan(e + f*x))^(1/2),x)
[Out] int(cos(e + f*x)^3*(d*tan(e + f*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)**3*(d*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.235 $\int \cos^5(e+fx)\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=111

$$\frac{\cos^5(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{7\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{30df}+\frac{7\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{20f\sqrt{\sin(2e+2fx)}}$$

```
[Out] -7/20*cos(f*x+e)*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticE(co
s(e+1/4*Pi+f*x),2^(1/2))*(d*tan(f*x+e))^(1/2)/f/sin(2*f*x+2*e)^(1/2)+7/30*c
os(f*x+e)^3*(d*tan(f*x+e))^(3/2)/d/f+1/5*cos(f*x+e)^5*(d*tan(f*x+e))^(3/2)/
d/f
```

Rubi [A] time = 0.14, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2612, 2615, 2572, 2639}

$$\frac{\cos^5(e+fx)(d\tan(e+fx))^{3/2}}{5df}+\frac{7\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{30df}+\frac{7\cos(e+fx)E\left(e+fx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(e+fx)}}{20f\sqrt{\sin(2e+2fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]^5*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (7*Cos[e + f*x]*EllipticE[e - Pi/4 + f*x, 2]*Sqrt[d*Tan[e + f*x]])/(20*f*Sq
rt[Sin[2*e + 2*f*x]]) + (7*Cos[e + f*x]^3*(d*Tan[e + f*x])^(3/2))/(30*d*f)
+ (Cos[e + f*x]^5*(d*Tan[e + f*x])^(3/2))/(5*d*f)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
```

```
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \cos^5(e+fx)\sqrt{d\tan(e+fx)}\,dx &= \frac{\cos^5(e+fx)(d\tan(e+fx))^{3/2}}{5df} + \frac{7}{10}\int \cos^3(e+fx)\sqrt{d\tan(e+fx)}\,dx \\
&= \frac{7\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{30df} + \frac{\cos^5(e+fx)(d\tan(e+fx))^{3/2}}{5df} + \frac{7}{20}\int \\
&= \frac{7\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{30df} + \frac{\cos^5(e+fx)(d\tan(e+fx))^{3/2}}{5df} + \frac{(7\sqrt{\mathrm{co}}}{} \\
&= \frac{7\cos^3(e+fx)(d\tan(e+fx))^{3/2}}{30df} + \frac{\cos^5(e+fx)(d\tan(e+fx))^{3/2}}{5df} + \frac{(7\cos}{} \\
&= \frac{7\cos(e+fx)E\left(e-\frac{\pi}{4}+fx\middle|2\right)\sqrt{d\tan(e+fx)}}{20f\sqrt{\sin(2e+2fx)}} + \frac{7\cos^3(e+fx)(d\tan(e+}{30df}
\end{aligned}$$

Mathematica [C] time = 0.78, size = 86, normalized size = 0.77

$$\frac{\cos(e+fx)\sqrt{d\tan(e+fx)}\left(28\tan(e+fx)\sqrt{\sec^2(e+fx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(e+fx)\right)+20\sin(2(e+fx))+3\,\mathrm{s}\right.}{120f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]^5*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (Cos[e + f*x]*Sqrt[d*Tan[e + f*x]]*(20*Sin[2*(e + f*x)] + 3*Sin[4*(e + f*x)
] + 28*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[e + f*x]^2]*Sqrt[Sec[e + f*x]^
2]*Tan[e + f*x]))/(120*f)
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(fx+e\right)}\cos\left(fx+e\right)^5, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^5*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*cos(f*x + e)^5, x)
```

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

$$\int \sqrt{d \tan\left(fx+e\right)} \cos\left(fx+e\right)^{5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^5*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(f*x + e))*cos(f*x + e)^5, x)
```

maple [B] time = 0.53, size = 550, normalized size = 4.95

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)^{2}\left(12\left(\cos^{6}\left(fx+e\right)\right)\sqrt{2}+2\left(\cos^{4}\left(fx+e\right)\right)\sqrt{2}+42\,\mathrm{EllipticE}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)^5*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/120/f*(-1+cos(f*x+e))^2*(12*cos(f*x+e)^6*2^(1/2)+2*cos(f*x+e)^4*2^(1/2)+
42*EllipticE((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*co
s(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin
(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-21*EllipticF(
(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*cos(f*x+e)*((-1
+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2
)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+42*EllipticE((-(-sin(f*x+e
)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))
^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f
*x+e))/sin(f*x+e))^(1/2)-21*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+
e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+s
in(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)
+7*cos(f*x+e)^2*2^(1/2)-21*cos(f*x+e)*2^(1/2))*(1+cos(f*x+e))^2*(d*sin(f*x+
e)/cos(f*x+e))^(1/2)/sin(f*x+e)^5*2^(1/2)
```

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

$$\int \sqrt{d \tan\left(fx+e\right)} \cos\left(fx+e\right)^{5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^5*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))*cos(f*x + e)^5, x)
```

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

$$\int \cos\left(e+f\,x\right)^5\,\sqrt{d\,\tan\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)^5*(d*tan(e + f*x))^(1/2),x)
[Out] int(cos(e + f*x)^5*(d*tan(e + f*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)**5*(d*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.236 $\int \sec^6(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=67

$$\frac{2(d\tan(a+bx))^{13/2}}{13bd^5}+\frac{4(d\tan(a+bx))^{9/2}}{9bd^3}+\frac{2(d\tan(a+bx))^{5/2}}{5bd}$$

```
[Out] 2/5*(d*tan(b*x+a))^(5/2)/b/d+4/9*(d*tan(b*x+a))^(9/2)/b/d^3+2/13*(d*tan(b*x
+a))^(13/2)/b/d^5
```

Rubi [A] time = 0.06, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 270}

$$\frac{2(d\tan(a+bx))^{13/2}}{13bd^5}+\frac{4(d\tan(a+bx))^{9/2}}{9bd^3}+\frac{2(d\tan(a+bx))^{5/2}}{5bd}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^6*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*(d*Tan[a + b*x])^(5/2))/(5*b*d) + (4*(d*Tan[a + b*x])^(9/2))/(9*b*d^3) +
 (2*(d*Tan[a + b*x])^(13/2))/(13*b*d^5)
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \sec^6(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{\text{Subst}\left(\int (dx)^{3/2}\left(1+x^2\right)^2\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left((dx)^{3/2}+\frac{2(dx)^{7/2}}{d^2}+\frac{(dx)^{11/2}}{d^4}\right)dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{2(d\tan(a+bx))^{5/2}}{5bd}+\frac{4(d\tan(a+bx))^{9/2}}{9bd^3}+\frac{2(d\tan(a+bx))^{13/2}}{13bd^5}$$

Mathematica [A] time = 0.14, size = 52, normalized size = 0.78

$$\frac{2d\left(45\sec^6(a+bx)-5\sec^4(a+bx)-8\sec^2(a+bx)-32\right)\sqrt{d\tan(a+bx)}}{585b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^6*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*d*(-32 - 8*Sec[a + b*x]^2 - 5*Sec[a + b*x]^4 + 45*Sec[a + b*x]^6)*Sqrt[d
*Tan[a + b*x]])/(585*b)
```

fricas [A] time = 0.75, size = 68, normalized size = 1.01

$$-\frac{2\left(32\,d\cos\left(bx+a\right)^6+8\,d\cos\left(bx+a\right)^4+5\,d\cos\left(bx+a\right)^2-45\,d\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{585\,b\cos\left(bx+a\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] -2/585*(32*d*cos(b*x + a)^6 + 8*d*cos(b*x + a)^4 + 5*d*cos(b*x + a)^2 - 45*
d)*sqrt(d*sin(b*x + a)/cos(b*x + a))/(b*cos(b*x + a)^6)
```

giac [A] time = 0.67, size = 78, normalized size = 1.16

$$\frac{2\left(45\sqrt{d\tan\left(bx+a\right)}\,d^6\tan\left(bx+a\right)^6+130\sqrt{d\tan\left(bx+a\right)}\,d^6\tan\left(bx+a\right)^4+117\sqrt{d\tan\left(bx+a\right)}\,d^6\tan\left(bx+\right.\right.}{585\,bd^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 2/585*(45*sqrt(d*tan(b*x + a))*d^6*tan(b*x + a)^6 + 130*sqrt(d*tan(b*x + a)
)*d^6*tan(b*x + a)^4 + 117*sqrt(d*tan(b*x + a))*d^6*tan(b*x + a)^2)/(b*d^5)
```

maple [A] time = 0.67, size = 60, normalized size = 0.90

$$\frac{2\left(32\left(\cos^{4}\left(bx+a\right)\right)+40\left(\cos^{2}\left(bx+a\right)\right)+45\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}\sin\left(bx+a\right)}{585b\cos\left(bx+a\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^6*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 2/585/b*(32*cos(b*x+a)^4+40*cos(b*x+a)^2+45)*(d*sin(b*x+a)/cos(b*x+a))^(3/2
)*sin(b*x+a)/cos(b*x+a)^5
```

maxima [A] time = 0.43, size = 51, normalized size = 0.76

$$\frac{2\left(45\left(d\tan\left(bx+a\right)\right)^{\frac{13}{2}}+130\left(d\tan\left(bx+a\right)\right)^{\frac{9}{2}}d^{2}+117\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}d^{4}\right)}{585\,bd^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 2/585*(45*(d*tan(b*x + a))^(13/2) + 130*(d*tan(b*x + a))^(9/2)*d^2 + 117*(d
*tan(b*x + a))^(5/2)*d^4)/(b*d^5)
```

mupad [B] time = 9.19, size = 392, normalized size = 5.85

$$-\frac{64\,d\,\sqrt{-\frac{d\,\left({\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{{\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{585\,b}-\frac{64\,d\,\sqrt{-\frac{d\,\left({\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{{\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{585\,b\,\left({\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)}-\frac{32\,d\,\sqrt{-\frac{d\,\left({\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{{\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{195\,b\,{\left({\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)}^2}+\frac{1216\,d\,\sqrt{-\frac{d\,\left({\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{{\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{117\,b\,{\left({\mathrm{e}}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)}^3}-\frac{3488\,d\,\sqrt{\cdots}}{117\,b\,\left(\mathrm{e}\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/cos(a + b*x)^6,x)
```

```
[Out] (1216*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))
/(117*b*(exp(a*2i + b*x*2i) + 1)^3) - (64*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1
i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(585*b*(exp(a*2i + b*x*2i) + 1)) - (32
*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(195
*b*(exp(a*2i + b*x*2i) + 1)^2) - (64*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2))/(585*b) - (3488*d*(-(d*(exp(a*2i + b*x*2i)*
1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(117*b*(exp(a*2i + b*x*2i) + 1)^
```

```
4) + (384*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1
/2))/(13*b*(exp(a*2i + b*x*2i) + 1)^5) - (128*d*(-(d*(exp(a*2i + b*x*2i)*1i
 - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(13*b*(exp(a*2i + b*x*2i) + 1)^6)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**6*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.237 $\int \sec^4(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=45

$$\frac{2(d\tan(a+bx))^{9/2}}{9bd^3}+\frac{2(d\tan(a+bx))^{5/2}}{5bd}$$

```
[Out] 2/5*(d*tan(b*x+a))^(5/2)/b/d+2/9*(d*tan(b*x+a))^(9/2)/b/d^3
```

Rubi [A] time = 0.05, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 14}

$$\frac{2(d\tan(a+bx))^{9/2}}{9bd^3}+\frac{2(d\tan(a+bx))^{5/2}}{5bd}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^4*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*(d*Tan[a + b*x])^(5/2))/(5*b*d) + (2*(d*Tan[a + b*x])^(9/2))/(9*b*d^3)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\begin{aligned}\int \sec^4(a+bx)(d\tan(a+bx))^{3/2}\,dx&=\frac{\text{Subst}\left(\int (dx)^{3/2}\left(1+x^2\right)\,dx,x,\tan(a+bx)\right)}{b}\\&=\frac{\text{Subst}\left(\int \left((dx)^{3/2}+\frac{(dx)^{7/2}}{d^2}\right)\,dx,x,\tan(a+bx)\right)}{b}\\&=\frac{2(d\tan(a+bx))^{5/2}}{5bd}+\frac{2(d\tan(a+bx))^{9/2}}{9bd^3}\end{aligned}$$

Mathematica [A] time = 0.14, size = 42, normalized size = 0.93

$$\frac{2d\left(5\sec^4(a+bx)-\sec^2(a+bx)-4\right)\sqrt{d\tan(a+bx)}}{45b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^4*(d*Tan[a + b*x])^(3/2),x]
[Out] (2*d*(-4 - Sec[a + b*x]^2 + 5*Sec[a + b*x]^4)*Sqrt[d*Tan[a + b*x]])/(45*b)
```

fricas [A] time = 0.78, size = 56, normalized size = 1.24

$$-\frac{2\left(4\,d\cos\left(bx+a\right)^4+d\cos\left(bx+a\right)^2-5\,d\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{45\,b\cos\left(bx+a\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
[Out] -2/45*(4*d*cos(b*x + a)^4 + d*cos(b*x + a)^2 - 5*d)*sqrt(d*sin(b*x + a)/cos
(b*x + a))/(b*cos(b*x + a)^4)
```

giac [A] time = 0.54, size = 55, normalized size = 1.22

$$\frac{2\left(5\sqrt{d\tan\left(bx+a\right)}\,d^4\tan\left(bx+a\right)^4+9\sqrt{d\tan\left(bx+a\right)}\,d^4\tan\left(bx+a\right)^2\right)}{45\,bd^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
[Out] 2/45*(5*sqrt(d*tan(b*x + a))*d^4*tan(b*x + a)^4 + 9*sqrt(d*tan(b*x + a))*d^
4*tan(b*x + a)^2)/(b*d^3)
```

maple [A] time = 0.72, size = 50, normalized size = 1.11

$$\frac{2\left(4\left(\cos^2\left(bx+a\right)\right)+5\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}\sin\left(bx+a\right)}{45b\cos\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^4*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 2/45/b*(4*cos(b*x+a)^2+5)*(d*sin(b*x+a)/cos(b*x+a))^(3/2)*sin(b*x+a)/cos(b*
x+a)^3
```

maxima [A] time = 0.32, size = 36, normalized size = 0.80

$$\frac{2\left(5\,\left(d\tan\left(bx+a\right)\right)^{\frac{9}{2}}+9\,\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}d^{2}\right)}{45\,bd^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 2/45*(5*(d*tan(b*x + a))^(9/2) + 9*(d*tan(b*x + a))^(5/2)*d^2)/(b*d^3)
```

mupad [B] time = 6.94, size = 276, normalized size = 6.13

$$-\frac{8\,d\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{45\,b}-\frac{8\,d\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{45\,b\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)}+\frac{56\,d\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{15\,b\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)^{2}}-\frac{64\,d\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1}}}{9\,b\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2\mathrm{i}}+1\right)^{3}}+\frac{32\,d\,\sqrt{-\frac{d\,\left(\mathrm{e}^{a\,2\mathrm{i}+}\right.}{\mathrm{e}^{a\,2\mathrm{i}+}}}}{9\,b\,\left(\mathrm{e}^{a\,2\mathrm{i}+b\,x\,2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/cos(a + b*x)^4,x)
```

```
[Out] (56*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(
15*b*(exp(a*2i + b*x*2i) + 1)^2) - (8*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/
(exp(a*2i + b*x*2i) + 1))^(1/2))/(45*b*(exp(a*2i + b*x*2i) + 1)) - (8*d*(-(
d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(45*b) - (
64*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2))/(9
*b*(exp(a*2i + b*x*2i) + 1)^3) + (32*d*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(
exp(a*2i + b*x*2i) + 1))^(1/2))/(9*b*(exp(a*2i + b*x*2i) + 1)^4)
```

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

$$\int\left(d\tan\left(a+bx\right)\right)^{\frac{3}{2}}\sec^{4}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**4*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(3/2)*sec(a + b*x)**4, x)
```

3.238 $\int \sec^2(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=22

$$\frac{2(d\tan(a+bx))^{5/2}}{5bd}$$

```
[Out] 2/5*(d*tan(b*x+a))^(5/2)/b/d
```

Rubi [A] time = 0.04, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 32}

$$\frac{2(d\tan(a+bx))^{5/2}}{5bd}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*(d*Tan[a + b*x])^(5/2))/(5*b*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\begin{aligned}\int \sec^2(a+bx)(d\tan(a+bx))^{3/2}\,dx &= \frac{\text{Subst}\left(\int (dx)^{3/2}\,dx, x, \tan(a+bx)\right)}{b}\\ &= \frac{2(d\tan(a+bx))^{5/2}}{5bd}\end{aligned}$$

Mathematica [A] time = 0.06, size = 22, normalized size = 1.00

$$\frac{2(d\tan(a+bx))^{5/2}}{5bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*(d*Tan[a + b*x])^(5/2))/(5*b*d)
```

fricas [B] time = 0.81, size = 45, normalized size = 2.05

$$-\frac{2\left(d\cos\left(bx+a\right)^{2}-d\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{5\,b\cos\left(bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] -2/5*(d*cos(b*x + a)^2 - d)*sqrt(d*sin(b*x + a)/cos(b*x + a))/(b*cos(b*x +
a)^2)
```

giac [A] time = 0.57, size = 24, normalized size = 1.09

$$\frac{2\sqrt{d\tan\left(bx+a\right)}\,d\tan\left(bx+a\right)^{2}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*sqrt(d*tan(b*x + a))*d*tan(b*x + a)^2/b
```

maple [A] time = 0.11, size = 19, normalized size = 0.86

$$\frac{2\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}}{5bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^2*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 2/5*(d*tan(b*x+a))^(5/2)/b/d
```

maxima [A] time = 0.69, size = 18, normalized size = 0.82

$$\frac{2\,\left(d\tan\left(bx+a\right)\right)^{\frac{5}{2}}}{5\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*(d*tan(b*x + a))^(5/2)/(b*d)
```

mupad [B] time = 3.57, size = 100, normalized size = 4.55

$$\frac{2\,d\,\sqrt{\frac{d\,\sin(2\,a+2\,b\,x)}{\cos(2\,a+2\,b\,x)+1}}\,\left(\cos\left(2\,a+2\,b\,x\right)-2\,\cos\left(4\,a+4\,b\,x\right)-\cos\left(6\,a+6\,b\,x\right)+2\right)}{5\,b\,\left(15\,\cos\left(2\,a+2\,b\,x\right)+6\,\cos\left(4\,a+4\,b\,x\right)+\cos\left(6\,a+6\,b\,x\right)+10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/cos(a + b*x)^2,x)
```

```
[Out] (2*d*((d*sin(2*a + 2*b*x))/(cos(2*a + 2*b*x) + 1))^(1/2)*(cos(2*a + 2*b*x)
- 2*cos(4*a + 4*b*x) - cos(6*a + 6*b*x) + 2))/(5*b*(15*cos(2*a + 2*b*x) + 6
*cos(4*a + 4*b*x) + cos(6*a + 6*b*x) + 10))
```

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

$$\int \left(d\tan\left(a+bx\right)\right)^{\frac{3}{2}}\sec^{2}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**2*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(3/2)*sec(a + b*x)**2, x)
```

3.239 $\int (d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}\,b}-\frac{d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{\sqrt{2}\,b}+\frac{d^{3/2}\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\right.}{2\sqrt{2}\,b}$$

```
[Out] 1/2*d^(3/2)*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-1/2*d^
(3/2)*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)+1/4*d^(3/2)*
ln(d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)-1/4*d
^(3/2)*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2
)+2*d*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.14, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3473, 3476, 329, 211, 1165, 628, 1162, 617, 204}

$$\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}\,b}-\frac{d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{\sqrt{2}\,b}+\frac{d^{3/2}\log\left(\sqrt{d}\,\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\right.}{2\sqrt{2}\,b}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(Sqrt[2]*b) -
(d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(Sqrt[2]*b) +
(d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b*x]]]
)/(2*Sqrt[2]*b) - (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqrt[2]*Sqr
t[d*Tan[a + b*x]]])/(2*Sqrt[2]*b) + (2*d*Sqrt[d*Tan[a + b*x]])/b
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

```
IntegerQ[n]
```

Rubi steps

$$\int (d\tan(a+bx))^{3/2}\,dx = \frac{2d\sqrt{d\tan(a+bx)}}{b} - d^2\int \frac{1}{\sqrt{d\tan(a+bx)}}\,dx$$
$$= \frac{2d\sqrt{d\tan(a+bx)}}{b} - \frac{d^3\,\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(d^2+x^2\right)}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{2d\sqrt{d\tan(a+bx)}}{b} - \frac{\left(2d^3\right)\text{Subst}\left(\int \frac{1}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{b}$$
$$= \frac{2d\sqrt{d\tan(a+bx)}}{b} - \frac{d^2\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{b} - \frac{d^2\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x\right.}{b}$$
$$= \frac{2d\sqrt{d\tan(a+bx)}}{b} + \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{2\sqrt{2}b} + \frac{d^{3/2}\,\text{Subst}\left(\int\right.}{}$$
$$= \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{2\sqrt{2}b} - \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx\right.}{2\sqrt{2}b}$$
$$= \frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}b} - \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}b} + \frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\,\text{ta}\right.}{}$$

Mathematica [A] time = 0.27, size = 159, normalized size = 0.76

$$\frac{(d\tan(a+bx))^{3/2}\left(2\sqrt{2}\tan^{-1}\left(1-\sqrt{2}\sqrt{\tan(a+bx)}\right)-2\sqrt{2}\tan^{-1}\left(\sqrt{2}\sqrt{\tan(a+bx)}+1\right)+8\sqrt{\tan(a+bx)}+\sqrt{}\right.}{4b\tan^{\frac{3}{2}}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] ((2*Sqrt[2]*ArcTan[1 - Sqrt[2]*Sqrt[Tan[a + b*x]]] - 2*Sqrt[2]*ArcTan[1 + S
qrt[2]*Sqrt[Tan[a + b*x]]] + Sqrt[2]*Log[1 - Sqrt[2]*Sqrt[Tan[a + b*x]] + T
an[a + b*x]] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[Tan[a + b*x]] + Tan[a + b*x]] +
 8*Sqrt[Tan[a + b*x]])*(d*Tan[a + b*x])^(3/2))/(4*b*Tan[a + b*x]^(3/2))
```

fricas [B] time = 0.83, size = 533, normalized size = 2.54

$$4\sqrt{2}\left(\frac{d^6}{b^4}\right)^{\frac{1}{4}} b\arctan\left(-\frac{d^6+\sqrt{2}\left(\frac{d^6}{b^4}\right)^{\frac{3}{4}} b^3 d\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}-\sqrt{2}\left(\frac{d^6}{b^4}\right)^{\frac{3}{4}} b^3\sqrt{\frac{\sqrt{2}\left(\frac{d^6}{b^4}\right)^{\frac{1}{4}} bd\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos(bx+a)+d^3\sin(bx+a)+\sqrt{\frac{d^6}{b^4}}\, b^2\cos(bx+a)}{\cos(bx+a)}}}{d^6}\right)+4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(-(d^6 + sqrt(2)*(d^6/b^4)^(3/4)*b^3
*d*sqrt(d*sin(b*x + a)/cos(b*x + a)) - sqrt(2)*(d^6/b^4)^(3/4)*b^3*sqrt((sq
rt(2)*(d^6/b^4)^(1/4)*b*d*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a) +
d^3*sin(b*x + a) + sqrt(d^6/b^4)*b^2*cos(b*x + a))/cos(b*x + a)))/d^6) + 4*
sqrt(2)*(d^6/b^4)^(1/4)*b*arctan((d^6 - sqrt(2)*(d^6/b^4)^(3/4)*b^3*d*sqrt(
d*sin(b*x + a)/cos(b*x + a)) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sqrt(-(sqrt(2)*(
d^6/b^4)^(1/4)*b*d*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a) - d^3*sin
(b*x + a) - sqrt(d^6/b^4)*b^2*cos(b*x + a))/cos(b*x + a)))/d^6) - sqrt(2)*(
d^6/b^4)^(1/4)*b*log((sqrt(2)*(d^6/b^4)^(1/4)*b*d*sqrt(d*sin(b*x + a)/cos(b
*x + a))*cos(b*x + a) + d^3*sin(b*x + a) + sqrt(d^6/b^4)*b^2*cos(b*x + a))/
cos(b*x + a)) + sqrt(2)*(d^6/b^4)^(1/4)*b*log(-(sqrt(2)*(d^6/b^4)^(1/4)*b*d
*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a) - d^3*sin(b*x + a) - sqrt(d
^6/b^4)*b^2*cos(b*x + a))/cos(b*x + a)) + 8*d*sqrt(d*sin(b*x + a)/cos(b*x +
 a)))/b
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.09, size = 176, normalized size = 0.84

$$\frac{2d\sqrt{d\tan(bx+a)}}{b}+\frac{d\left(d^2\right)^{\frac{1}{4}}\sqrt{2}\arctan\left(-\frac{\sqrt{2}\sqrt{d\tan(bx+a)}}{\left(d^2\right)^{\frac{1}{4}}}+1\right)}{2b}-\frac{d\left(d^2\right)^{\frac{1}{4}}\sqrt{2}\ln\left(\frac{d\tan(bx+a)+\left(d^2\right)^{\frac{1}{4}}\sqrt{d\tan(bx+a)}\sqrt{2}+\sqrt{d}}{d\tan(bx+a)-\left(d^2\right)^{\frac{1}{4}}\sqrt{d\tan(bx+a)}\sqrt{2}+\sqrt{d}}\right)}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(b*x+a))^(3/2),x)
```

```
[Out] 2*d*(d*tan(b*x+a))^(1/2)/b+1/2/b*d*(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2
)^(1/4)*(d*tan(b*x+a))^(1/2)+1)-1/4/b*d*(d^2)^(1/4)*2^(1/2)*ln((d*tan(b*x+a
)+(d^2)^(1/4)*(d*tan(b*x+a))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*tan(b*x+a)-(d^2)
^(1/4)*(d*tan(b*x+a))^(1/2)*2^(1/2)+(d^2)^(1/2)))-1/2/b*d*(d^2)^(1/4)*2^(1/
2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*tan(b*x+a))^(1/2)+1)
```

maxima [A] time = 0.84, size = 170, normalized size = 0.81

$$-\frac{2\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+2\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan(bx+a)}\right)}{2\,\sqrt{d}}\right)+\sqrt{2}\,d^{\frac{5}{2}}\log\left(d\tan(bx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*d^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(
b*x + a)))/sqrt(d)) + 2*sqrt(2)*d^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + sqrt(2)*d^(5/2)*log(d*tan(b*x + a) +
 sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - sqrt(2)*d^(5/2)*log(d*tan(b*x
+ a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 8*sqrt(d*tan(b*x + a))*d
^2)/(b*d)
```

mupad [B] time = 2.65, size = 73, normalized size = 0.35

$$\frac{2\,d\,\sqrt{d\tan\left(a+b\,x\right)}}{b}+\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d\,\tan\left(a+b\,x\right)}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{b}+\frac{{\left(-1\right)}^{1/4}\,d^{3/2}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d\,\tan\left(a+b\,x\right)}}{\sqrt{d}}\right)\,1{}\mathrm{i}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2),x)
```

```
[Out] (2*d*(d*tan(a + b*x))^(1/2))/b + ((-1)^(1/4)*d^(3/2)*atan(((-1)^(1/4)*(d*ta
n(a + b*x))^(1/2))/d^(1/2))*1i)/b + ((-1)^(1/4)*d^(3/2)*atanh(((-1)^(1/4)*(
d*tan(a + b*x))^(1/2))/d^(1/2))*1i)/b
```

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

$$\int \left(d\tan\left(a+bx\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(3/2), x)
```

3.240 $\int \cos^2(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=225

$$-\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}+\frac{d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}-\frac{d^{3/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right.}{8\sqrt{2}\,b}$$

```
[Out] -1/8*d^(3/2)*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)+1/8*d
^(3/2)*arctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b*2^(1/2)-1/16*d^(3/2
)*ln(d^(1/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(1/2)+1/1
6*d^(3/2)*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b*2^(
1/2)-1/2*d*cos(b*x+a)^2*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.16, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2607, 288, 329, 211, 1165, 628, 1162, 617, 204}

$$-\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b}+\frac{d^{3/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}\,b}-\frac{d^{3/2}\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right.}{8\sqrt{2}\,b}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -(d^(3/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*b)
 + (d^(3/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*
b) - (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b
*x]]])/(8*Sqrt[2]*b) + (d^(3/2)*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqrt[2
]*Sqrt[d*Tan[a + b*x]]])/(8*Sqrt[2]*b) - (d*Cos[a + b*x]^2*Sqrt[d*Tan[a + b
*x]])/(2*b)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 211

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[a/b, 2]
], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*r), Int[(r - s*x^2)/(a + b*x^4),
 x], x] + Dist[1/(2*r), Int[(r + s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a, b
}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &&
```

```
AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \cos^2(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{\text{Subst}\left(\int \frac{(dx)^{3/2}}{\left(1+x^2\right)^2}\,dx, x, \tan(a+bx)\right)}{b}$$

$$= -\frac{d\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2b} + \frac{d^2\,\text{Subst}\left(\int \frac{1}{\sqrt{dx}\left(1+x^2\right)}\,dx, x, \tan(a+b$$

$$= -\frac{d\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2b} + \frac{d\,\text{Subst}\left(\int \frac{1}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(a+bx)}\right.}{2b}$$

$$= -\frac{d\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2b} + \frac{\text{Subst}\left(\int \frac{d-x^2}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{4b}$$

$$= -\frac{d\cos^2(a+bx)\sqrt{d\tan(a+bx)}}{2b} - \frac{d^{3/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\,\text{ta}\right.}{8\sqrt{2}\,b}$$

$$= -\frac{d^{3/2}\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}\,b} + \frac{d^{3/2}\log\left(\sqrt{d}\right.+}{}$$

$$= -\frac{d^{3/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} + \frac{d^{3/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,b} - \frac{d^{3/2}\,\text{l}}{}$$

Mathematica [A] time = 0.28, size = 110, normalized size = 0.49

$$-\frac{d\csc(a+bx)\sqrt{d\tan(a+bx)}\left(\sin(a+bx)+\sin(3(a+bx))+\sqrt{\sin(2(a+bx))}\sin^{-1}(\cos(a+bx)-\sin(a+bx)\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]^2*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -1/8*(d*Csc[a + b*x]*(Sin[a + b*x] + ArcSin[Cos[a + b*x] - Sin[a + b*x]]*Sq
rt[Sin[2*(a + b*x)]] - Log[Cos[a + b*x] + Sin[a + b*x] + Sqrt[Sin[2*(a + b*
x)]]]*Sqrt[Sin[2*(a + b*x)]] + Sin[3*(a + b*x)])*Sqrt[d*Tan[a + b*x]])/b
```

fricas [B] time = 83.68, size = 1558, normalized size = 6.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] -1/32*(16*d*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)^2 + 2*sqrt(2)*(d
^6/b^4)^(1/4)*b*arctan(1/2*(2*d^10*sin(b*x + a) + sqrt(4*sqrt(d^6/b^4)*b^2*
d^7*cos(b*x + a)*sin(b*x + a) + d^10 + 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos
(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sq
rt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^3*cos(b*x + a
) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x +
 a)) - 4*(b^2*d^7*cos(b*x + a)^3 - b^2*d^7*cos(b*x + a))*sqrt(d^6/b^4) + (s
qrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5
*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/((2*d^10*cos(b*x + a)^2 -
 d^10)*sin(b*x + a))) + 2*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(-1/2*(2*d^10*sin
(b*x + a) - sqrt(4*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + d^10 -
 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/
b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))*(sqrt
(2)*(d^6/b^4)^(1/4)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*
x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) - 4*(b^2*d^7*cos(b*x + a)^3 - b^2
*d^7*cos(b*x + a))*sqrt(d^6/b^4) - (sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x +
 a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos
(b*x + a)))/((2*d^10*cos(b*x + a)^2 - d^10)*sin(b*x + a))) + 2*sqrt(2)*(d^6
/b^4)^(1/4)*b*arctan(1/2*(sqrt(4*sqrt(d^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x
 + a) + d^10 - 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a)*sin(b*x + a) +
 sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*
x + a)))*(2*d^5*sin(b*x + a) + (sqrt(2)*(d^6/b^4)^(1/4)*b*d^3*cos(b*x + a)
+ sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a
))) + (sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a) - sqrt(2)*(d^6/b^4)^(3/4)
*b^3*d^5*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(d^10*sin(b*x + a
))) + 2*sqrt(2)*(d^6/b^4)^(1/4)*b*arctan(-1/2*(sqrt(4*sqrt(d^6/b^4)*b^2*d^7
*cos(b*x + a)*sin(b*x + a) + d^10 + 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*
x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*sqrt(
d*sin(b*x + a)/cos(b*x + a)))*(2*d^5*sin(b*x + a) - (sqrt(2)*(d^6/b^4)^(1/4
)*b*d^3*cos(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*sin(b*x + a))*sqrt(d*sin
(b*x + a)/cos(b*x + a))) - (sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*cos(b*x + a) - sq
rt(2)*(d^6/b^4)^(3/4)*b^3*d^5*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a
)))/(d^10*sin(b*x + a))) - sqrt(2)*(d^6/b^4)^(1/4)*b*log(4*sqrt(d^6/b^4)*b^
2*d^7*cos(b*x + a)*sin(b*x + a) + d^10 + 2*(sqrt(2)*(d^6/b^4)^(1/4)*b*d^8*c
```

```
os(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*x + a)^2)*
sqrt(d*sin(b*x + a)/cos(b*x + a))) + sqrt(2)*(d^6/b^4)^(1/4)*b*log(4*sqrt(d
^6/b^4)*b^2*d^7*cos(b*x + a)*sin(b*x + a) + d^10 - 2*(sqrt(2)*(d^6/b^4)^(1/
4)*b*d^8*cos(b*x + a)*sin(b*x + a) + sqrt(2)*(d^6/b^4)^(3/4)*b^3*d^5*cos(b*
x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a))))/b
```

giac [A] time = 0.59, size = 210, normalized size = 0.93

$$\frac{1}{16}d\left(\frac{2\sqrt{2}\sqrt{|d|}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{b}+\frac{2\sqrt{2}\sqrt{|d|}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{b}+\frac{\sqrt{2}\sqrt{|d|}\,\mathrm{lo}\cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 1/16*d*(2*sqrt(2)*sqrt(abs(d))*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2
*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b + 2*sqrt(2)*sqrt(abs(d))*arctan(-1/2
*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/b +
sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan(b*x + a))*sqrt
(abs(d)) + abs(d))/b - sqrt(2)*sqrt(abs(d))*log(d*tan(b*x + a) - sqrt(2)*sq
rt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/b - 8*sqrt(d*tan(b*x + a))*d^2/((
d^2*tan(b*x + a)^2 + d^2)*b))
```

maple [C] time = 0.47, size = 670, normalized size = 2.98

$$\frac{(-1+\cos(bx+a))\left(i\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}}\;\mathrm{EllipticPi}\left(\sqrt{\cdots}\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^2*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/8/b*(-1+cos(b*x+a))*(I*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1
+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(
b*x+a))^(1/2)*EllipticPi((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2
+1/2*I,1/2*2^(1/2))-I*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+co
s(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x
+a))^(1/2)*EllipticPi((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2-1/
2*I,1/2*2^(1/2))-sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x
+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^
(1/2)*EllipticPi((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1
/2*2^(1/2))-sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+s
```

```
in(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)
*EllipticPi((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^
(1/2))+2*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(
b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*El
lipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-2*cos(b
*x+a)^3*2^(1/2)+2*cos(b*x+a)^2*2^(1/2))*(cos(b*x+a)+1)^2*cos(b*x+a)*(d*sin(
b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^5*2^(1/2)
```

maxima [A] time = 0.61, size = 188, normalized size = 0.84

$$\frac{2\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan\left(bx+a\right)}\right)}{2\,\sqrt{d}}\right)+2\sqrt{2}\,d^{\frac{5}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan\left(bx+a\right)}\right)}{2\,\sqrt{d}}\right)+\sqrt{2}\,d^{\frac{5}{2}}\log\left(d\tan\left(bx+a\right.\right.}{16\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] 1/16*(2*sqrt(2)*d^(5/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(
b*x + a)))/sqrt(d)) + 2*sqrt(2)*d^(5/2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d*tan(b*x + a)))/sqrt(d)) + sqrt(2)*d^(5/2)*log(d*tan(b*x + a) +
 sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - sqrt(2)*d^(5/2)*log(d*tan(b*x
+ a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d) - 8*sqrt(d*tan(b*x + a))*d
^4/(d^2*tan(b*x + a)^2 + d^2))/(b*d)
```

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

$$\int \cos\left(a+b\,x\right)^2\,{\left(d\,\mathrm{tan}\left(a+b\,x\right)\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^2*(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(cos(a + b*x)^2*(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**2*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.241 $\int \sec^5(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=136

$$-\frac{4d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{77b\sqrt{d\tan(a+bx)}}+\frac{2d\sec^5(a+bx)\sqrt{d\tan(a+bx)}}{11b}-\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+}}{77b}$$

```
[Out] 4/77*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*
Pi+b*x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(1/2)/b/(d*tan(b*x+a))^(1/2)-4/7
7*d*sec(b*x+a)*(d*tan(b*x+a))^(1/2)/b-2/77*d*sec(b*x+a)^3*(d*tan(b*x+a))^(1
/2)/b+2/11*d*sec(b*x+a)^5*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.18, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2611, 2613, 2614, 2573, 2641}

$$-\frac{4d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{77b\sqrt{d\tan(a+bx)}}+\frac{2d\sec^5(a+bx)\sqrt{d\tan(a+bx)}}{11b}-\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+}}{77b}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^5*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-4*d^2*EllipticF[a - Pi/4 + b*x, 2]*Sec[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(
77*b*Sqrt[d*Tan[a + b*x]]) - (4*d*Sec[a + b*x]*Sqrt[d*Tan[a + b*x]])/(77*b)
 - (2*d*Sec[a + b*x]^3*Sqrt[d*Tan[a + b*x]])/(77*b) + (2*d*Sec[a + b*x]^5*S
qrt[d*Tan[a + b*x]])/(11*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \sec^5(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{2d\sec^5(a+bx)\sqrt{d\tan(a+bx)}}{11b} - \frac{1}{11}d^2\int \frac{\sec^5(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

$$= -\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{77b} + \frac{2d\sec^5(a+bx)\sqrt{d\tan(a+bx)}}{11b} - \frac{1}{77}($$

$$= -\frac{4d\sec(a+bx)\sqrt{d\tan(a+bx)}}{77b} - \frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{77b} + \frac{2d\sec}{}$$

$$= -\frac{4d\sec(a+bx)\sqrt{d\tan(a+bx)}}{77b} - \frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{77b} + \frac{2d\sec}{}$$

$$= -\frac{4d\sec(a+bx)\sqrt{d\tan(a+bx)}}{77b} - \frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{77b} + \frac{2d\sec}{}$$

$$= -\frac{4d^2F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{77b\sqrt{d\tan(a+bx)}} - \frac{4d\sec(a+bx)\sqrt{d\tan}}{77b}$$

Mathematica [C] time = 0.82, size = 90, normalized size = 0.66

$$-\frac{d\sec^5(a+bx)\sqrt{d\tan(a+bx)}\left(16\cos^6(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(a+bx)\right)+6\cos(2(a+bx))+\right.}{154b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^5*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -1/154*(d*Sec[a + b*x]^5*(-23 + 6*Cos[2*(a + b*x)] + Cos[4*(a + b*x)] + 16*
Cos[a + b*x]^6*Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[a + b*x]^2]*Sqrt[Sec[a
 + b*x]^2])*Sqrt[d*Tan[a + b*x]])/b
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d\sec\left(bx+a\right)^{5}\tan\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*sec(b*x + a)^5*tan(b*x + a), x)
```

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

$$\int\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}\sec\left(bx+a\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sec(b*x + a)^5, x)
```

maple [A] time = 0.59, size = 251, normalized size = 1.85

$$\left(-1+\cos\left(bx+a\right)\right)\left(4\sin\left(bx+a\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}}\,\left(\cos^{5}\left(bx+a\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^5*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/77/b*(-1+cos(b*x+a))*(4*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-
1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin
(b*x+a))^(1/2)*cos(b*x+a)^5*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+
a))^(1/2),1/2*2^(1/2))-2*2^(1/2)*cos(b*x+a)^5+2*cos(b*x+a)^4*2^(1/2)-cos(b*
x+a)^3*2^(1/2)+cos(b*x+a)^2*2^(1/2)+7*cos(b*x+a)*2^(1/2)-7*2^(1/2))*(cos(b*
x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^5/cos(b*x+a)^4*2^(1/2)
```

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

$$\int\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}\sec\left(bx+a\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sec(b*x + a)^5, x)
```

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

$$\int \frac{(d\tan(a+b\,x))^{3/2}}{\cos(a+b\,x)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/cos(a + b*x)^5,x)
```

```
[Out] int((d*tan(a + b*x))^(3/2)/cos(a + b*x)^5, x)
```

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

$$\int (d\tan(a+bx))^{\frac{3}{2}}\sec^5(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**5*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(3/2)*sec(a + b*x)**5, x)
```

3.242 $\int \sec^3(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=108

$$-\frac{2d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{21b\sqrt{d\tan(a+bx)}}+\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{7b}-\frac{2d\sec(a+bx)\sqrt{d\tan(a+}}{21b}$$

```
[Out] 2/21*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*
Pi+b*x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(1/2)/b/(d*tan(b*x+a))^(1/2)-2/2
1*d*sec(b*x+a)*(d*tan(b*x+a))^(1/2)/b+2/7*d*sec(b*x+a)^3*(d*tan(b*x+a))^(1/
2)/b
```

Rubi [A] time = 0.14, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2611, 2613, 2614, 2573, 2641}

$$-\frac{2d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{21b\sqrt{d\tan(a+bx)}}+\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{7b}-\frac{2d\sec(a+bx)\sqrt{d\tan(a+}}{21b}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*d^2*EllipticF[a - Pi/4 + b*x, 2]*Sec[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(
21*b*Sqrt[d*Tan[a + b*x]]) - (2*d*Sec[a + b*x]*Sqrt[d*Tan[a + b*x]])/(21*b)
 + (2*d*Sec[a + b*x]^3*Sqrt[d*Tan[a + b*x]])/(7*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
```

```
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \sec^3(a+bx)(d\tan(a+bx))^{3/2}\,dx &= \frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{7b}-\frac{1}{7}d^2\int\frac{\sec^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx\\ &= -\frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{21b}+\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{7b}-\frac{1}{21}\left(2d\right.\\ &= -\frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{21b}+\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{7b}-\frac{\left(2d^2\right.}{}\\ &= -\frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{21b}+\frac{2d\sec^3(a+bx)\sqrt{d\tan(a+bx)}}{7b}-\frac{\left(2d^2\right.}{}\\ &= -\frac{2d^2F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{21b\sqrt{d\tan(a+bx)}}-\frac{2d\sec(a+bx)\sqrt{d\tan}}{21b}\end{aligned}$$

Mathematica [C] time = 0.48, size = 80, normalized size = 0.74

$$-\frac{d\sec^3(a+bx)\sqrt{d\tan(a+bx)}\left(4\cos^4(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(a+bx)\right)+\cos(2(a+bx))-5\right)}{21b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -1/21*(d*Sec[a + b*x]^3*(-5 + Cos[2*(a + b*x)] + 4*Cos[a + b*x]^4*Hypergeom
etric2F1[1/4, 1/2, 5/4, -Tan[a + b*x]^2]*Sqrt[Sec[a + b*x]^2])*Sqrt[d*Tan[a
 + b*x]])/b
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d\sec\left(bx+a\right)^{3}\tan\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*sec(b*x + a)^3*tan(b*x + a), x)
```

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

$$\int \left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}\sec\left(bx+a\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sec(b*x + a)^3, x)
```

maple [A] time = 0.61, size = 225, normalized size = 2.08

$$\frac{\left(-1+\cos\left(bx+a\right)\right)\left(2\sin\left(bx+a\right)\text{EllipticF}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^3*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/21/b*(-1+cos(b*x+a))*(2*sin(b*x+a)*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))
/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+
a))^(1/2)*cos(b*x+a)^3-cos(b*x+a)^3*2^(1/2)+cos(b*x+a)^2*2^(1/2)+3*cos(b*x+
a)*2^(1/2)-3*2^(1/2))*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(
b*x+a)^5/cos(b*x+a)^2*2^(1/2)
```

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

$$\int \left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}\sec\left(bx+a\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sec(b*x + a)^3, x)
```

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

$$\int \frac{(d\tan(a+b\,x))^{3/2}}{\cos(a+b\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/cos(a + b*x)^3,x)
```

```
[Out] int((d*tan(a + b*x))^(3/2)/cos(a + b*x)^3, x)
```

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

$$\int (d\tan(a+bx))^{\frac{3}{2}}\sec^3(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**3*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(3/2)*sec(a + b*x)**3, x)
```

3.243 $\int \sec(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=80

$$\frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{3b}-\frac{d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{3b\sqrt{d\tan(a+bx)}}$$

```
[Out] 1/3*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*P
i+b*x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(1/2)/b/(d*tan(b*x+a))^(1/2)+2/3*
d*sec(b*x+a)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.08, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2611, 2614, 2573, 2641}

$$\frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{3b}-\frac{d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{3b\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -(d^2*EllipticF[a - Pi/4 + b*x, 2]*Sec[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(3*
b*Sqrt[d*Tan[a + b*x]]) + (2*d*Sec[a + b*x]*Sqrt[d*Tan[a + b*x]])/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
```

```
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \sec(a+bx)(d\tan(a+bx))^{3/2}\,dx = \frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{3b} - \frac{1}{3}d^2\int \frac{\sec(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$
$$= \frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{3b} - \frac{\left(d^2\sqrt{\sin(a+bx)}\right)\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}\,dx}{3\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}$$
$$= \frac{2d\sec(a+bx)\sqrt{d\tan(a+bx)}}{3b} - \frac{\left(d^2\sec(a+bx)\sqrt{\sin(2a+2bx)}\right)\int \frac{1}{\sqrt{\sin(2a+}}}{3\sqrt{d\tan(a+bx)}}$$
$$= -\frac{d^2F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{3b\sqrt{d\tan(a+bx)}} + \frac{2d\sec(a+bx)\sqrt{d\tan(a}}{3b}$$

Mathematica [C] time = 0.31, size = 69, normalized size = 0.86

$$\frac{2d\cos(a+bx)\sqrt{d\tan(a+bx)}\left(\sec^2(a+bx)-\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(a+bx)\right)\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*d*Cos[a + b*x]*(Sec[a + b*x]^2 - Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[a
 + b*x]^2]*Sqrt[Sec[a + b*x]^2])*Sqrt[d*Tan[a + b*x]])/(3*b)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan(bx+a)}\,d\sec(bx+a)\tan(bx+a)\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*sec(b*x + a)*tan(b*x + a), x)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}}\sec(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sec(b*x + a), x)
```

maple [A] time = 0.42, size = 188, normalized size = 2.35

$$\frac{(-1+\cos(bx+a))\left(\sin(bx+a)\cos(bx+a)\,\text{EllipticF}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx}{\sin}}\right.}{3b\sin(bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/3/b*(-1+cos(b*x+a))*(sin(b*x+a)*cos(b*x+a)*EllipticF((-(-sin(b*x+a)-1+cos
(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*
((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/
sin(b*x+a))^(1/2)+cos(b*x+a)*2^(1/2)-2^(1/2))*(cos(b*x+a)+1)^2*(d*sin(b*x+a
)/cos(b*x+a))^(3/2)/sin(b*x+a)^5*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}}\sec(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*sec(b*x + a), x)
```

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

$$\int \frac{(d\tan(a+b\,x))^{3/2}}{\cos(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^(3/2)/cos(a + b*x),x)
```

```
[Out] int((d*tan(a + b*x))^(3/2)/cos(a + b*x), x)
```

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

$$\int (d\tan(a+bx))^{\frac{3}{2}}\sec(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))**(3/2),x)
[Out] Integral((d*tan(a + b*x))**(3/2)*sec(a + b*x), x)
```

3.244 $\int \cos(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=78

$$\frac{d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2b\sqrt{d\tan(a+bx)}}-\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{b}$$

```
[Out] -1/2*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*
Pi+b*x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(1/2)/b/(d*tan(b*x+a))^(1/2)-d*c
os(b*x+a)*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.10, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2610, 2614, 2573, 2641}

$$\frac{d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{2b\sqrt{d\tan(a+bx)}}-\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (d^2*EllipticF[a - Pi/4 + b*x, 2]*Sec[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(2*b
*Sqrt[d*Tan[a + b*x]]) - (d*Cos[a + b*x]*Sqrt[d*Tan[a + b*x]])/b
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
```

```
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cos(a+bx)(d\tan(a+bx))^{3/2}\,dx = -\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{b}+\frac{1}{2}d^2\int \frac{\sec(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$
$$= -\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{b}+\frac{\left(d^2\sqrt{\sin(a+bx)}\right)\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}\,d}{2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}$$
$$= -\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{b}+\frac{\left(d^2\sec(a+bx)\sqrt{\sin(2a+2bx)}\right)\int \frac{1}{\sqrt{\sin(2a}}}{2\sqrt{d\tan(a+bx)}}$$
$$= \frac{d^2F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{2b\sqrt{d\tan(a+bx)}}-\frac{d\cos(a+bx)\sqrt{d\tan(a+}}{b}$$

Mathematica [C] time = 0.14, size = 58, normalized size = 0.74

$$\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}\left(\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(a+bx)\right)-1\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (d*Cos[a + b*x]*(-1 + Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[a + b*x]^2]*Sqr
t[Sec[a + b*x]^2])*Sqrt[d*Tan[a + b*x]])/b
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan(bx+a)}\,d\cos(bx+a)\tan(bx+a)\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*cos(b*x + a)*tan(b*x + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign:
(2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)ext_reduc
e Error: Bad Argument Typeext_reduce Error: Bad Argument TypeEvaluation tim
e: 16.24Done
```

maple [B] time = 0.47, size = 196, normalized size = 2.51

$$-\frac{(-1+\cos(bx+a))\left(\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}}\ \mathrm{EllipticF}\left(\sqrt{\cdots}\right.\right.}{2b\,\mathrm{s}\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/2/b*(-1+cos(b*x+a))*(sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+
cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b
*x+a))^(1/2)*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2
^(1/2))+cos(b*x+a)^2*2^(1/2)-cos(b*x+a)*2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^
2*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^5*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}}\cos(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*cos(b*x + a), x)
```

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

$$\int \cos(a+b\,x)\,(d\tan(a+b\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)*(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(cos(a + b*x)*(d*tan(a + b*x))^(3/2), x)
```

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

$$\int (d\tan(a+bx))^{\frac{3}{2}}\cos(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(3/2)*cos(a + b*x), x)
```

3.245 $\int \cos^3(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=108

$$\frac{d^2\sqrt{\sin(2a+2bx)}\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{12b\sqrt{d\tan(a+bx)}}-\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{3b}+\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{6b}$$

```
[Out] -1/12*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4
*Pi+b*x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(1/2)/b/(d*tan(b*x+a))^(1/2)+1/
6*d*cos(b*x+a)*(d*tan(b*x+a))^(1/2)/b-1/3*d*cos(b*x+a)^3*(d*tan(b*x+a))^(1/
2)/b
```

Rubi [A] time = 0.13, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2610, 2612, 2614, 2573, 2641}

$$\frac{d^2\sqrt{\sin(2a+2bx)}\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{12b\sqrt{d\tan(a+bx)}}-\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{3b}+\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{6b}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (d^2*EllipticF[a - Pi/4 + b*x, 2]*Sec[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(12*
b*Sqrt[d*Tan[a + b*x]]) + (d*Cos[a + b*x]*Sqrt[d*Tan[a + b*x]])/(6*b) - (d*
Cos[a + b*x]^3*Sqrt[d*Tan[a + b*x]])/(3*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
```

```
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cos^3(a+bx)(d\tan(a+bx))^{3/2}\,dx = -\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{3b}+\frac{1}{6}d^2\int\frac{\cos(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$
$$=\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{6b}-\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{3b}+\frac{1}{12}d^2\int$$
$$=\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{6b}-\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{3b}+\frac{\left(d^2\sqrt{\sin(}\right.}{12\sqrt{}}$$
$$=\frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{6b}-\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{3b}+\frac{\left(d^2\sec(a\right.}{}$$
$$=\frac{d^2F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{12b\sqrt{d\tan(a+bx)}}+\frac{d\cos(a+bx)\sqrt{d\tan(a}}{6b}$$

Mathematica [C] time = 1.13, size = 96, normalized size = 0.89

$$-\frac{\cos(a+bx)(d\tan(a+bx))^{3/2}\left(\cos(2(a+bx))\sqrt{\tan(a+bx)}+\sqrt[4]{-1}\sqrt{\sec^2(a+bx)}\,F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(a+bx}\right.\right.\right.}{6b\tan^{\frac{3}{2}}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]^3*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -1/6*(Cos[a + b*x]*((-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a +
b*x]]], -1]*Sqrt[Sec[a + b*x]^2] + Cos[2*(a + b*x)]*Sqrt[Tan[a + b*x]])*(d*
Tan[a + b*x])^(3/2))/(b*Tan[a + b*x]^(3/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d\cos\left(bx+a\right)^{3}\tan\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*cos(b*x + a)^3*tan(b*x + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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```
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heck sign: (2*pi/x/2)>(-2*pi/x/2)ext_reduce Error: Bad Argument Typeext_red
uce Error: Bad Argument TypeEvaluation time: 16.16Done
```

maple [A] time = 0.50, size = 222, normalized size = 2.06

$$-\frac{(-1+\cos(bx+a))\left(\sin(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}}\operatorname{EllipticF}\left(\sqrt{-\cdots}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^3*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/12/b*(-1+cos(b*x+a))*(sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1
+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(
b*x+a))^(1/2)*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*
2^(1/2))+2*cos(b*x+a)^4*2^(1/2)-2*cos(b*x+a)^3*2^(1/2)-cos(b*x+a)^2*2^(1/2)
+cos(b*x+a)*2^(1/2))*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^
(3/2)/sin(b*x+a)^5*2^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}}\cos(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^(3/2)*cos(b*x + a)^3, x)
```

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

$$\int \cos(a+b\,x)^3\,(d\tan(a+b\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^3*(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(cos(a + b*x)^3*(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**3*(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.246 $\int \cos^5(a+bx)(d\tan(a+bx))^{3/2}\,dx$

Optimal. Leaf size=136

$$\frac{d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{24b\sqrt{d\tan(a+bx)}}-\frac{d\cos^5(a+bx)\sqrt{d\tan(a+bx)}}{5b}+\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{30b}+$$

```
[Out] -1/24*d^2*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4
*Pi+b*x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(1/2)/b/(d*tan(b*x+a))^(1/2)+1/
12*d*cos(b*x+a)*(d*tan(b*x+a))^(1/2)/b+1/30*d*cos(b*x+a)^3*(d*tan(b*x+a))^(
1/2)/b-1/5*d*cos(b*x+a)^5*(d*tan(b*x+a))^(1/2)/b
```

Rubi [A] time = 0.17, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2610, 2612, 2614, 2573, 2641}

$$\frac{d^2\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{24b\sqrt{d\tan(a+bx)}}-\frac{d\cos^5(a+bx)\sqrt{d\tan(a+bx)}}{5b}+\frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{30b}+$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^5*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (d^2*EllipticF[a - Pi/4 + b*x, 2]*Sec[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(24*
b*Sqrt[d*Tan[a + b*x]]) + (d*Cos[a + b*x]*Sqrt[d*Tan[a + b*x]])/(12*b) + (d
*Cos[a + b*x]^3*Sqrt[d*Tan[a + b*x]])/(30*b) - (d*Cos[a + b*x]^5*Sqrt[d*Tan
[a + b*x]])/(5*b)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \cos^5(a+bx)(d\tan(a+bx))^{3/2}\,dx = -\frac{d\cos^5(a+bx)\sqrt{d\tan(a+bx)}}{5b} + \frac{1}{10}d^2\int \frac{\cos^3(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx$$

$$= \frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{30b} - \frac{d\cos^5(a+bx)\sqrt{d\tan(a+bx)}}{5b} + \frac{1}{12}d^2 \int$$

$$= \frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{12b} + \frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{30b} - \frac{d\cos^5(}{}$$

$$= \frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{12b} + \frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{30b} - \frac{d\cos^5(}{}$$

$$= \frac{d\cos(a+bx)\sqrt{d\tan(a+bx)}}{12b} + \frac{d\cos^3(a+bx)\sqrt{d\tan(a+bx)}}{30b} - \frac{d\cos^5(}{}$$

$$= \frac{d^2F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{24b\sqrt{d\tan(a+bx)}} + \frac{d\cos(a+bx)\sqrt{d\tan(}{12b}$$

Mathematica [C] time = 2.47, size = 131, normalized size = 0.96

$$\frac{\cos(2(a+bx))\csc(a+bx)(d\tan(a+bx))^{3/2}\left((10\cos(2(a+bx))+3\cos(4(a+bx))-3)\sqrt{\tan(a+bx)}+10\sqrt[4]{-1}\right.}{120b\sqrt{\tan(a+bx)}\left(\tan^2(a+bx)-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]^5*(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (Cos[2*(a + b*x)]*Csc[a + b*x]*(10*(-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4
)*Sqrt[Tan[a + b*x]]], -1]*Sqrt[Sec[a + b*x]^2] + (-3 + 10*Cos[2*(a + b*x)]
 + 3*Cos[4*(a + b*x)])*Sqrt[Tan[a + b*x]])*(d*Tan[a + b*x])^(3/2))/(120*b*S
qrt[Tan[a + b*x]]*(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(bx+a\right)}\,d\cos\left(bx+a\right)^{5}\tan\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^5*(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*d*cos(b*x + a)^5*tan(b*x + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^5*(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)
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ext_reduce Error: Bad Argument Typeext_reduce Error: Bad Argument TypeEvalu
ation time: 16.39Done
```

maple [A] time = 0.51, size = 250, normalized size = 1.84

$$-\frac{(-1+\cos(bx+a))\left(12\sqrt{2}\,\left(\cos^6(bx+a)\right)-12\sqrt{2}\,\left(\cos^5(bx+a)\right)-2\left(\cos^4(bx+a)\right)\sqrt{2}+5\sin(bx+a)\sqrt{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^5*(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/120/b*(-1+cos(b*x+a))*(12*cos(b*x+a)^6*2^(1/2)-12*2^(1/2)*cos(b*x+a)^5-2
*cos(b*x+a)^4*2^(1/2)+5*sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+
cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b
*x+a))^(1/2)*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2
^(1/2))+2*cos(b*x+a)^3*2^(1/2)-5*cos(b*x+a)^2*2^(1/2)+5*cos(b*x+a)*2^(1/2))
```

```
*cos(b*x+a)*(cos(b*x+a)+1)^2*(d*sin(b*x+a)/cos(b*x+a))^(3/2)/sin(b*x+a)^5*2
^(1/2)
```

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

$$\int (d\tan(bx+a))^{\frac{3}{2}}\cos(bx+a)^5\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^5*(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
[Out] integrate((d*tan(b*x + a))^(3/2)*cos(b*x + a)^5, x)
```

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

$$\int \cos(a+b\,x)^5\,(d\tan(a+b\,x))^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^5*(d*tan(a + b*x))^(3/2),x)
[Out] int(cos(a + b*x)^5*(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**5*(d*tan(b*x+a))**(3/2),x)
[Out] Timed out
```

3.247 $\int \sec^6(e+fx)(d\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=67

$$\frac{2(d\tan(e+fx))^{15/2}}{15d^5f}+\frac{4(d\tan(e+fx))^{11/2}}{11d^3f}+\frac{2(d\tan(e+fx))^{7/2}}{7df}$$

```
[Out] 2/7*(d*tan(f*x+e))^(7/2)/d/f+4/11*(d*tan(f*x+e))^(11/2)/d^3/f+2/15*(d*tan(f
*x+e))^(15/2)/d^5/f
```

Rubi [A] time = 0.06, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 270}

$$\frac{2(d\tan(e+fx))^{15/2}}{15d^5f}+\frac{4(d\tan(e+fx))^{11/2}}{11d^3f}+\frac{2(d\tan(e+fx))^{7/2}}{7df}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^6*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (2*(d*Tan[e + f*x])^(7/2))/(7*d*f) + (4*(d*Tan[e + f*x])^(11/2))/(11*d^3*f)
 + (2*(d*Tan[e + f*x])^(15/2))/(15*d^5*f)
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \sec^6(e+fx)(d\tan(e+fx))^{5/2}\,dx = \frac{\text{Subst}\left(\int (dx)^{5/2}\left(1+x^2\right)^2\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \left((dx)^{5/2}+\frac{2(dx)^{9/2}}{d^2}+\frac{(dx)^{13/2}}{d^4}\right)dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{2(d\tan(e+fx))^{7/2}}{7df}+\frac{4(d\tan(e+fx))^{11/2}}{11d^3f}+\frac{2(d\tan(e+fx))^{15/2}}{15d^5f}$$

Mathematica [A] time = 0.44, size = 52, normalized size = 0.78

$$\frac{2(44\cos(2(e+fx))+4\cos(4(e+fx))+117)\sec^4(e+fx)(d\tan(e+fx))^{7/2}}{1155df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^6*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (2*(117 + 44*Cos[2*(e + f*x)] + 4*Cos[4*(e + f*x)])*Sec[e + f*x]^4*(d*Tan[e
 + f*x])^(7/2))/(1155*d*f)
```

fricas [A] time = 0.65, size = 82, normalized size = 1.22

$$-\frac{2\left(32\,d^2\cos\left(fx+e\right)^6+24\,d^2\cos\left(fx+e\right)^4+21\,d^2\cos\left(fx+e\right)^2-77\,d^2\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)}{1155\,f\cos\left(fx+e\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^6*(d*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] -2/1155*(32*d^2*cos(f*x + e)^6 + 24*d^2*cos(f*x + e)^4 + 21*d^2*cos(f*x + e
)^2 - 77*d^2)*sqrt(d*sin(f*x + e)/cos(f*x + e))*sin(f*x + e)/(f*cos(f*x + e
)^7)
```

giac [A] time = 0.84, size = 84, normalized size = 1.25

$$\frac{2\left(77\sqrt{d\tan\left(fx+e\right)}\,d^7\tan\left(fx+e\right)^7+210\sqrt{d\tan\left(fx+e\right)}\,d^7\tan\left(fx+e\right)^5+165\sqrt{d\tan\left(fx+e\right)}\,d^7\tan\left(fx-\right.\right.}{1155\,d^5f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^6*(d*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] 2/1155*(77*sqrt(d*tan(f*x + e))*d^7*tan(f*x + e)^7 + 210*sqrt(d*tan(f*x + e
))*d^7*tan(f*x + e)^5 + 165*sqrt(d*tan(f*x + e))*d^7*tan(f*x + e)^3)/(d^5*f
)
```

maple [A] time = 0.68, size = 60, normalized size = 0.90

$$\frac{2\left(32\left(\cos^{4}\left(fx+e\right)\right)+56\left(\cos^{2}\left(fx+e\right)\right)+77\right)\left(\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\sin\left(fx+e\right)}{1155f\cos\left(fx+e\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^6*(d*tan(f*x+e))^(5/2),x)
```

```
[Out] 2/1155/f*(32*cos(f*x+e)^4+56*cos(f*x+e)^2+77)*(d*sin(f*x+e)/cos(f*x+e))^(5/
2)*sin(f*x+e)/cos(f*x+e)^5
```

maxima [A] time = 0.66, size = 51, normalized size = 0.76

$$\frac{2\left(77\left(d\tan\left(fx+e\right)\right)^{\frac{15}{2}}+210\left(d\tan\left(fx+e\right)\right)^{\frac{11}{2}}d^{2}+165\left(d\tan\left(fx+e\right)\right)^{\frac{7}{2}}d^{4}\right)}{1155\,d^{5}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^6*(d*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] 2/1155*(77*(d*tan(f*x + e))^(15/2) + 210*(d*tan(f*x + e))^(11/2)*d^2 + 165*
(d*tan(f*x + e))^(7/2)*d^4)/(d^5*f)
```

mupad [B] time = 13.29, size = 474, normalized size = 7.07

$$\frac{d^{2}\sqrt{-\frac{d\left(\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}+1}}\,64\mathrm{i}}{1155\,f}+\frac{d^{2}\sqrt{-\frac{d\left(\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}+1}}\,64\mathrm{i}}{1155\,f\,\left(\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}+1\right)}+\frac{d^{2}\sqrt{-\frac{d\left(\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}+1}}\,32\mathrm{i}}{385\,f\,\left(\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}+1\right)^{2}}-\frac{d^{2}\sqrt{-\frac{d\left(\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}\,1\mathrm{i}-\mathrm{i}\right)}{\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}+1}}\,2432\mathrm{i}}{231\,f\,\left(\mathrm{e}^{e\,2\mathrm{i}+f\,x\,2\mathrm{i}}+1\right)^{3}}+\frac{d^{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(5/2)/cos(e + f*x)^6,x)
```

```
[Out] (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*64i
)/(1155*f) + (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) +
1))^(1/2)*64i)/(1155*f*(exp(e*2i + f*x*2i) + 1)) + (d^2*(-(d*(exp(e*2i + f*
```

```
x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*32i)/(385*f*(exp(e*2i + f*x
*2i) + 1)^2) - (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i)
+ 1))^(1/2)*2432i)/(231*f*(exp(e*2i + f*x*2i) + 1)^3) + (d^2*(-(d*(exp(e*2i
 + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*1504i)/(33*f*(exp(e*2i
 + f*x*2i) + 1)^4) - (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*
x*2i) + 1))^(1/2)*4288i)/(55*f*(exp(e*2i + f*x*2i) + 1)^5) + (d^2*(-(d*(exp
(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*896i)/(15*f*(exp(
e*2i + f*x*2i) + 1)^6) - (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i
+ f*x*2i) + 1))^(1/2)*256i)/(15*f*(exp(e*2i + f*x*2i) + 1)^7)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**6*(d*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.248 $\int \sec^4(e+fx)(d\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=45

$$\frac{2(d\tan(e+fx))^{11/2}}{11d^3f}+\frac{2(d\tan(e+fx))^{7/2}}{7df}$$

[Out] 2/7*(d*tan(f*x+e))^(7/2)/d/f+2/11*(d*tan(f*x+e))^(11/2)/d^3/f

Rubi [A] time = 0.05, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 14}

$$\frac{2(d\tan(e+fx))^{11/2}}{11d^3f}+\frac{2(d\tan(e+fx))^{7/2}}{7df}$$

Antiderivative was successfully verified.

[In] Int[Sec[e + f*x]^4*(d*Tan[e + f*x])^(5/2),x]

[Out] (2*(d*Tan[e + f*x])^(7/2))/(7*d*f) + (2*(d*Tan[e + f*x])^(11/2))/(11*d^3*f)

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] && !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \sec^4(e+fx)(d\tan(e+fx))^{5/2}\,dx = \frac{\text{Subst}\left(\int (dx)^{5/2}\left(1+x^2\right)\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{\text{Subst}\left(\int \left((dx)^{5/2}+\frac{(dx)^{9/2}}{d^2}\right)\,dx, x, \tan(e+fx)\right)}{f}$$
$$= \frac{2(d\tan(e+fx))^{7/2}}{7df} + \frac{2(d\tan(e+fx))^{11/2}}{11d^3f}$$

Mathematica [A] time = 0.27, size = 42, normalized size = 0.93

$$\frac{2(2\cos(2(e+fx))+9)\sec^2(e+fx)(d\tan(e+fx))^{7/2}}{77df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^4*(d*Tan[e + f*x])^(5/2),x]
[Out] (2*(9 + 2*Cos[2*(e + f*x)])*Sec[e + f*x]^2*(d*Tan[e + f*x])^(7/2))/(77*d*f)
```

fricas [A] time = 0.60, size = 69, normalized size = 1.53

$$-\frac{2\left(4\,d^2\cos\left(fx+e\right)^4+3\,d^2\cos\left(fx+e\right)^2-7\,d^2\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)}{77\,f\cos\left(fx+e\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^4*(d*tan(f*x+e))^(5/2),x, algorithm="fricas")
[Out] -2/77*(4*d^2*cos(f*x + e)^4 + 3*d^2*cos(f*x + e)^2 - 7*d^2)*sqrt(d*sin(f*x
+ e)/cos(f*x + e))*sin(f*x + e)/(f*cos(f*x + e)^5)
```

giac [A] time = 0.72, size = 59, normalized size = 1.31

$$\frac{2\left(7\sqrt{d\tan\left(fx+e\right)}\,d^5\tan\left(fx+e\right)^5+11\sqrt{d\tan\left(fx+e\right)}\,d^5\tan\left(fx+e\right)^3\right)}{77\,d^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^4*(d*tan(f*x+e))^(5/2),x, algorithm="giac")
```

[Out] 2/77*(7*sqrt(d*tan(f*x + e))*d^5*tan(f*x + e)^5 + 11*sqrt(d*tan(f*x + e))*d^5*tan(f*x + e)^3)/(d^3*f)

maple [A] time = 0.58, size = 50, normalized size = 1.11

$$\frac{2\left(4\left(\cos^2\left(fx+e\right)\right)+7\right)\left(\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\sin\left(fx+e\right)}{77f\cos\left(fx+e\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sec(f*x+e)^4*(d*tan(f*x+e))^(5/2),x)

[Out] 2/77/f*(4*cos(f*x+e)^2+7)*(d*sin(f*x+e)/cos(f*x+e))^(5/2)*sin(f*x+e)/cos(f*x+e)^3

maxima [A] time = 0.33, size = 36, normalized size = 0.80

$$\frac{2\left(7\left(d\tan\left(fx+e\right)\right)^{\frac{11}{2}}+11\left(d\tan\left(fx+e\right)\right)^{\frac{7}{2}}d^2\right)}{77d^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(f*x+e)^4*(d*tan(f*x+e))^(5/2),x, algorithm="maxima")

[Out] 2/77*(7*(d*tan(f*x + e))^(11/2) + 11*(d*tan(f*x + e))^(7/2)*d^2)/(d^3*f)

mupad [B] time = 7.22, size = 352, normalized size = 7.82

$$\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,8i}{77\,f}+\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,8i}{77\,f\,\left(e^{e\,2i+f\,x\,2i}+1\right)}-\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,296i}{77\,f\,\left(e^{e\,2i+f\,x\,2i}+1\right)^2}+\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,944i}{77\,f\,\left(e^{e\,2i+f\,x\,2i}+1\right)^3}-\frac{d^2\sqrt{\;}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*tan(e + f*x))^(5/2)/cos(e + f*x)^4,x)

[Out] (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*8i)/(77*f) + (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*8i)/(77*f*(exp(e*2i + f*x*2i) + 1)) - (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*296i)/(77*f*(exp(e*2i + f*x*2i) + 1)^2) + (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*944i)/(77*f*(exp(e*2i + f*x*2i) + 1)^3) - (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*160i)/(11*f*(exp(e*2i + f*x*2i

```
) + 1)^4) + (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1
))^(1/2)*64i)/(11*f*(exp(e*2i + f*x*2i) + 1)^5)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**4*(d*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.249 $\int \sec^2(e+fx)(d\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=22

$$\frac{2(d\tan(e+fx))^{7/2}}{7df}$$

```
[Out] 2/7*(d*tan(f*x+e))^(7/2)/d/f
```

Rubi [A] time = 0.04, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 32}

$$\frac{2(d\tan(e+fx))^{7/2}}{7df}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^2*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (2*(d*Tan[e + f*x])^(7/2))/(7*d*f)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m + 1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] && !(IntegerQ[(n - 1)/2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\begin{aligned}\int \sec^2(e+fx)(d\tan(e+fx))^{5/2}\,dx &= \frac{\text{Subst}\left(\int (dx)^{5/2}\,dx, x, \tan(e+fx)\right)}{f}\\ &= \frac{2(d\tan(e+fx))^{7/2}}{7df}\end{aligned}$$

Mathematica [A] time = 0.06, size = 22, normalized size = 1.00

$$\frac{2(d\tan(e+fx))^{7/2}}{7df}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^2*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (2*(d*Tan[e + f*x])^(7/2))/(7*d*f)
```

fricas [B] time = 0.47, size = 55, normalized size = 2.50

$$-\frac{2\left(d^2\cos\left(fx+e\right)^2-d^2\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)}{7f\cos\left(fx+e\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^2*(d*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] -2/7*(d^2*cos(f*x + e)^2 - d^2)*sqrt(d*sin(f*x + e)/cos(f*x + e))*sin(f*x +
 e)/(f*cos(f*x + e)^3)
```

giac [A] time = 0.74, size = 28, normalized size = 1.27

$$\frac{2\sqrt{d\tan\left(fx+e\right)}d^2\tan\left(fx+e\right)^3}{7f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^2*(d*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*sqrt(d*tan(f*x + e))*d^2*tan(f*x + e)^3/f
```

maple [A] time = 0.12, size = 19, normalized size = 0.86

$$\frac{2\left(d\tan\left(fx+e\right)\right)^{\frac{7}{2}}}{7df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^2*(d*tan(f*x+e))^(5/2),x)
```

```
[Out] 2/7*(d*tan(f*x+e))^(7/2)/d/f
```

maxima [A] time = 0.33, size = 18, normalized size = 0.82

$$\frac{2\left(d\tan\left(fx+e\right)\right)^{\frac{7}{2}}}{7df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^2*(d*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*(d*tan(f*x + e))^(7/2)/(d*f)
```

mupad [B] time = 5.58, size = 230, normalized size = 10.45

$$\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,2i}{7\,f}-\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,12i}{7\,f\,\left(e^{e\,2i+f\,x\,2i}+1\right)}+\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,24i}{7\,f\,{\left(e^{e\,2i+f\,x\,2i}+1\right)}^2}-\frac{d^2\sqrt{-\frac{d\left(e^{e\,2i+f\,x\,2i}\,1i-i\right)}{e^{e\,2i+f\,x\,2i}+1}}\,16i}{7\,f\,{\left(e^{e\,2i+f\,x\,2i}+1\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(5/2)/cos(e + f*x)^2,x)
```

```
[Out] (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*2i)
/(7*f) - (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^
(1/2)*12i)/(7*f*(exp(e*2i + f*x*2i) + 1)) + (d^2*(-(d*(exp(e*2i + f*x*2i)*1
i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/2)*24i)/(7*f*(exp(e*2i + f*x*2i) + 1)
^2) - (d^2*(-(d*(exp(e*2i + f*x*2i)*1i - 1i))/(exp(e*2i + f*x*2i) + 1))^(1/
2)*16i)/(7*f*(exp(e*2i + f*x*2i) + 1)^3)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**2*(d*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.250 $\int (d\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=212

$$\frac{d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f}-\frac{d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{\sqrt{2}f}-\frac{d^{5/2}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}+\right.}{2\sqrt{2}f}$$

```
[Out] 1/2*d^(5/2)*arctan(1-2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)-1/2*d^
(5/2)*arctan(1+2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)-1/4*d^(5/2)*
ln(d^(1/2)-2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))/f*2^(1/2)+1/4*d
^(5/2)*ln(d^(1/2)+2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))/f*2^(1/2
)+2/3*d*(d*tan(f*x+e))^(3/2)/f
```

Rubi [A] time = 0.14, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3473, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f}-\frac{d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{\sqrt{2}f}-\frac{d^{5/2}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}+\right.}{2\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (d^(5/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(d^(5/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(Sqrt[2]*f) -
(d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] - Sqrt[2]*Sqrt[d*Tan[e + f*x]]]
)/(2*Sqrt[2]*f) + (d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] + Sqrt[2]*Sqr
t[d*Tan[e + f*x]]])/(2*Sqrt[2]*f) + (2*d*(d*Tan[e + f*x])^(3/2))/(3*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
```

```
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3473

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*(b*Tan[c + d
*x])^(n - 1))/(d*(n - 1)), x] - Dist[b^2, Int[(b*Tan[c + d*x])^(n - 2), x],
 x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
IntegerQ[n]
```

Rubi steps

$$\int (d\tan(e+fx))^{5/2}\,dx = \frac{2d(d\tan(e+fx))^{3/2}}{3f} - d^2\int \sqrt{d\tan(e+fx)}\,dx$$

$$= \frac{2d(d\tan(e+fx))^{3/2}}{3f} - \frac{d^3\,\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\tan(e+fx)\right)}{f}$$

$$= \frac{2d(d\tan(e+fx))^{3/2}}{3f} - \frac{(2d^3)\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{f}$$

$$= \frac{2d(d\tan(e+fx))^{3/2}}{3f} + \frac{d^3\,\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{f} - \frac{d^3\,\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx\right.}{f}$$

$$= \frac{2d(d\tan(e+fx))^{3/2}}{3f} - \frac{d^{5/2}\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\tan(e+fx)}\right)}{2\sqrt{2}f} - \frac{d^{5/2}\,\text{Subst}\left(\right.}{}$$

$$= -\frac{d^{5/2}\log\left(\sqrt{d}+\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right)}{2\sqrt{2}f} + \frac{d^{5/2}\log\left(\sqrt{d}+\sqrt{d}\tan(e+f\right.}{2\sqrt{2}}$$

$$= \frac{d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{d^{5/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{\sqrt{2}f} - \frac{d^{5/2}\log\left(\sqrt{d}+\sqrt{d}\,\mathrm{t}\right.}{}$$

Mathematica [C] time = 0.04, size = 40, normalized size = 0.19

$$-\frac{2d(d\tan(e+fx))^{3/2}\left({}_2F_1\left(\frac{3}{4},1;\frac{7}{4};-\tan^2(e+fx)\right)-1\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-2*d*(-1 + Hypergeometric2F1[3/4, 1, 7/4, -Tan[e + f*x]^2])*(d*Tan[e + f*x
])^(3/2))/(3*f)
```

fricas [B] time = 0.50, size = 594, normalized size = 2.80

$$\frac{12\sqrt{2}\left(\frac{d^{10}}{f^4}\right)^{\frac{1}{4}} f \arctan\left(-\frac{d^{10}+\sqrt{2}\left(\frac{d^{10}}{f^4}\right)^{\frac{1}{4}} d^7 f\sqrt{\frac{d\sin(fx+e)}{\cos(fx+e)}}-\sqrt{2}\left(\frac{d^{10}}{f^4}\right)^{\frac{1}{4}} f\sqrt{\frac{d^{15}\sin(fx+e)+\sqrt{\frac{d^{10}}{f^4}}\,d^{10}f^2\cos(fx+e)+\sqrt{2}\left(\frac{d^{10}}{f^4}\right)^{\frac{3}{4}} d^7 f^3\sqrt{\frac{d\sin(fx+e)}{\cos(fx+e)}}\,\mathrm{c}}{\cos(fx+e)}}}{d^{10}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*sqrt(2)*(d^10/f^4)^(1/4)*f*arctan(-(d^10 + sqrt(2)*(d^10/f^4)^(1/4
)*d^7*f*sqrt(d*sin(f*x + e)/cos(f*x + e)) - sqrt(2)*(d^10/f^4)^(1/4)*f*sqrt
((d^15*sin(f*x + e) + sqrt(d^10/f^4)*d^10*f^2*cos(f*x + e) + sqrt(2)*(d^10/
f^4)^(3/4)*d^7*f^3*sqrt(d*sin(f*x + e)/cos(f*x + e))*cos(f*x + e))/cos(f*x
+ e)))/d^10)*cos(f*x + e) + 12*sqrt(2)*(d^10/f^4)^(1/4)*f*arctan((d^10 - sq
rt(2)*(d^10/f^4)^(1/4)*d^7*f*sqrt(d*sin(f*x + e)/cos(f*x + e)) + sqrt(2)*(d
^10/f^4)^(1/4)*f*sqrt((d^15*sin(f*x + e) + sqrt(d^10/f^4)*d^10*f^2*cos(f*x
+ e) - sqrt(2)*(d^10/f^4)^(3/4)*d^7*f^3*sqrt(d*sin(f*x + e)/cos(f*x + e))*c
os(f*x + e))/cos(f*x + e)))/d^10)*cos(f*x + e) + 3*sqrt(2)*(d^10/f^4)^(1/4)
*f*cos(f*x + e)*log((d^15*sin(f*x + e) + sqrt(d^10/f^4)*d^10*f^2*cos(f*x +
e) + sqrt(2)*(d^10/f^4)^(3/4)*d^7*f^3*sqrt(d*sin(f*x + e)/cos(f*x + e))*cos
(f*x + e))/cos(f*x + e)) - 3*sqrt(2)*(d^10/f^4)^(1/4)*f*cos(f*x + e)*log((d
^15*sin(f*x + e) + sqrt(d^10/f^4)*d^10*f^2*cos(f*x + e) - sqrt(2)*(d^10/f^4
)^(3/4)*d^7*f^3*sqrt(d*sin(f*x + e)/cos(f*x + e))*cos(f*x + e))/cos(f*x + e
)) + 8*d^2*sqrt(d*sin(f*x + e)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e))
```

giac [A] time = 0.55, size = 218, normalized size = 1.03

$$-\frac{1}{12}\,d^2\left(\frac{6\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(fx+e)}\right)}{2\sqrt{|d|}}\right)}{df}+\frac{6\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(fx+e)}\right)}{2\sqrt{|d|}}\right)}{df}-\frac{3\sqrt{2}\,|d|^{\frac{3}{2}}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] -1/12*d^2*(6*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d))
+ 2*sqrt(d*tan(f*x + e)))/sqrt(abs(d)))/(d*f) + 6*sqrt(2)*abs(d)^(3/2)*arct
an(-1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(f*x + e)))/sqrt(abs(d)
```

```
))/(d*f) - 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(f*x + e) + sqrt(2)*sqrt(d*tan(f
*x + e))*sqrt(abs(d)) + abs(d))/(d*f) + 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(f*
x + e) - sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(abs(d)) + abs(d))/(d*f) - 8*sqrt
(d*tan(f*x + e))*tan(f*x + e)/f)
```

maple [A] time = 0.07, size = 182, normalized size = 0.86

$$\frac{2d\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{3f}-\frac{d^3\sqrt{2}\ \ln\left(\frac{d\tan\left(fx+e\right)-\left(d^2\right)^{\frac{1}{4}}\sqrt{d\tan\left(fx+e\right)}\ \sqrt{2}+\sqrt{d^2}}{d\tan\left(fx+e\right)+\left(d^2\right)^{\frac{1}{4}}\sqrt{d\tan\left(fx+e\right)}\ \sqrt{2}+\sqrt{d^2}}\right)}{4f\left(d^2\right)^{\frac{1}{4}}}-\frac{d^3\sqrt{2}\ \arctan\left(\frac{\sqrt{2}\ \sqrt{d\tan\left(fx+e\right)}}{\left(d^2\right)^{\frac{1}{4}}}+1\right)}{2f\left(d^2\right)^{\frac{1}{4}}}+\frac{d^3\sqrt{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(5/2),x)
```

```
[Out] 2/3*d*(d*tan(f*x+e))^(3/2)/f-1/4/f*d^3/(d^2)^(1/4)*2^(1/2)*ln((d*tan(f*x+e)
-(d^2)^(1/4)*(d*tan(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2))/(d*tan(f*x+e)+(d^2)^
(1/4)*(d*tan(f*x+e))^(1/2)*2^(1/2)+(d^2)^(1/2)))-1/2/f*d^3/(d^2)^(1/4)*2^(1
/2)*arctan(2^(1/2)/(d^2)^(1/4)*(d*tan(f*x+e))^(1/2)+1)+1/2/f*d^3/(d^2)^(1/4
)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1/4)*(d*tan(f*x+e))^(1/2)+1)
```

maxima [A] time = 0.59, size = 176, normalized size = 0.83

$$-\frac{3\,d^4\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(d\tan\left(fx+e\right)+\sqrt{2}\,\sqrt{d\tan\left(fx+e\right)}\,\sqrt{d}+d\right)}{\sqrt{d}}\right.}{12\,d f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*d^4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(
f*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d*tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(f*x + e) +
 sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(f*x
+ e) - sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d)) - 8*(d*tan(f*x +
e))^(3/2)*d^2)/(d*f)
```

mupad [B] time = 2.74, size = 74, normalized size = 0.35

$$\frac{2\,d\,{\left(d\,\tan\left(e+f\,x\right)\right)}^{3/2}}{3\,f}-\frac{{\left(-1\right)}^{1/4}\,d^{5/2}\,\mathrm{atan}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d\,\tan\left(e+f\,x\right)}}{\sqrt{d}}\right)}{f}+\frac{{\left(-1\right)}^{1/4}\,d^{5/2}\,\mathrm{atanh}\left(\frac{{\left(-1\right)}^{1/4}\,\sqrt{d\,\tan\left(e+f\,x\right)}}{\sqrt{d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(5/2),x)
```

```
[Out] (2*d*(d*tan(e + f*x))^(3/2))/(3*f) - ((-1)^(1/4)*d^(5/2)*atan(((-1)^(1/4)*(
d*tan(e + f*x))^(1/2))/d^(1/2)))/f + ((-1)^(1/4)*d^(5/2)*atanh(((-1)^(1/4)*
(d*tan(e + f*x))^(1/2))/d^(1/2)))/f
```

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

$$\int \left(d\tan\left(e+fx\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(5/2),x)
```

```
[Out] Integral((d*tan(e + f*x))**(5/2), x)
```

3.251 $\int \cos^2(e+fx)(d\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=225

$$-\frac{3d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f}+\frac{3d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}f}+\frac{3d^{5/2}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+}\right.}{8\sqrt{2}f}$$

```
[Out] -3/8*d^(5/2)*arctan(1-2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+3/8*d
^(5/2)*arctan(1+2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+3/16*d^(5/2
)*ln(d^(1/2)-2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))/f*2^(1/2)-3/1
6*d^(5/2)*ln(d^(1/2)+2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))/f*2^(
1/2)-1/2*d*cos(f*x+e)^2*(d*tan(f*x+e))^(3/2)/f
```

Rubi [A] time = 0.16, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {2607, 288, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{3d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f}+\frac{3d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}f}+\frac{3d^{5/2}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+}\right.}{8\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]^2*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-3*d^(5/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(4*Sqrt[2]*
f) + (3*d^(5/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(4*Sqrt
[2]*f) + (3*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] - Sqrt[2]*Sqrt[d*Tan
[e + f*x]]])/(8*Sqrt[2]*f) - (3*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x]
+ Sqrt[2]*Sqrt[d*Tan[e + f*x]]])/(8*Sqrt[2]*f) - (d*Cos[e + f*x]^2*(d*Tan[e
 + f*x])^(3/2))/(2*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
```

```
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \cos^2(e+fx)(d\tan(e+fx))^{5/2}\,dx = \frac{\text{Subst}\left(\int \frac{(dx)^{5/2}}{\left(1+x^2\right)^2}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2f} + \frac{\left(3d^2\right)\text{Subst}\left(\int \frac{\sqrt{dx}}{1+x^2}\,dx, x, \tan(e+fx\right.}{4f}$$

$$= -\frac{d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2f} + \frac{(3d)\,\text{Subst}\left(\int \frac{x^2}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(e+\right.}{2f}$$

$$= -\frac{d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2f} - \frac{(3d)\,\text{Subst}\left(\int \frac{d-x^2}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(e+\right.}{4f}$$

$$= -\frac{d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{2f} + \frac{\left(3d^{5/2}\right)\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \right.}{8\sqrt{2}f}$$

$$= \frac{3d^{5/2}\log\left(\sqrt{d}+\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right)}{8\sqrt{2}f} - \frac{3d^{5/2}\log\left(\sqrt{d}+\right.}{}$$

$$= -\frac{3d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f} + \frac{3d^{5/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{4\sqrt{2}f} + \frac{3d^{5}}{}$$

Mathematica [A] time = 0.19, size = 107, normalized size = 0.48

$$-\frac{d^2\sqrt{\sin(2(e+fx))}\sqrt{d\tan(e+fx)}\left(2\sqrt{\sin(2(e+fx))}+3\csc(e+fx)\sin^{-1}(\cos(e+fx)-\sin(e+fx))+3\csc(\right.}{8f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]^2*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] -1/8*(d^2*(3*ArcSin[Cos[e + f*x] - Sin[e + f*x]]*Csc[e + f*x] + 3*Csc[e + f
*x]*Log[Cos[e + f*x] + Sin[e + f*x] + Sqrt[Sin[2*(e + f*x)]]] + 2*Sqrt[Sin[
2*(e + f*x)]])*Sqrt[Sin[2*(e + f*x)]]*Sqrt[d*Tan[e + f*x]])/f
```

fricas [B] time = 110.72, size = 1918, normalized size = 8.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^2*(d*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] -1/64*(32*d^2*sqrt(d*sin(f*x + e)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) -
 12*sqrt(2)*(d^10/f^4)^(1/4)*f*arctan((sqrt(d^16 + 4*sqrt(d^10/f^4)*d^11*f^
2*cos(f*x + e)*sin(f*x + e) - 2*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x +
e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*s
in(f*x + e)/cos(f*x + e)))*(2*d^8*cos(f*x + e)*sin(f*x + e) + sqrt(d^10/f^4
)*d^3*f^2 + (sqrt(2)*(d^10/f^4)^(1/4)*d^5*f*cos(f*x + e)*sin(f*x + e) + sqr
t(2)*(d^10/f^4)^(3/4)*f^3*cos(f*x + e)^2)*sqrt(d*sin(f*x + e)/cos(f*x + e))
) + (sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3
/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))/(
2*d^16*cos(f*x + e)^2 - d^16)) - 12*sqrt(2)*(d^10/f^4)^(1/4)*f*arctan(-(sqr
t(d^16 + 4*sqrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) + 2*(sqrt(2)*(
d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*co
s(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))*(2*d^8*cos(f*x
+ e)*sin(f*x + e) + sqrt(d^10/f^4)*d^3*f^2 - (sqrt(2)*(d^10/f^4)^(1/4)*d^5*
f*cos(f*x + e)*sin(f*x + e) + sqrt(2)*(d^10/f^4)^(3/4)*f^3*cos(f*x + e)^2)*
sqrt(d*sin(f*x + e)/cos(f*x + e))) - (sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f
*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqr
t(d*sin(f*x + e)/cos(f*x + e)))/(2*d^16*cos(f*x + e)^2 - d^16)) - 12*sqrt(2
)*(d^10/f^4)^(1/4)*f*arctan(-1/2*(2*d^16*sin(f*x + e) - sqrt(d^16 + 4*sqrt(
d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) + 2*(sqrt(2)*(d^10/f^4)^(1/4)*
d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f
*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))*(sqrt(2)*(d^10/f^4)^(1/4)*d^5*f
*sin(f*x + e) + sqrt(2)*(d^10/f^4)^(3/4)*f^3*cos(f*x + e))*sqrt(d*sin(f*x +
 e)/cos(f*x + e)) - 4*(d^11*f^2*cos(f*x + e)^3 - d^11*f^2*cos(f*x + e))*sqr
t(d^10/f^4) + (sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*sin(f*x + e) + sqrt(2)*(d^10
/f^4)^(3/4)*d^8*f^3*cos(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))/((2*d^
16*cos(f*x + e)^2 - d^16)*sin(f*x + e))) - 12*sqrt(2)*(d^10/f^4)^(1/4)*f*ar
ctan(1/2*(2*d^16*sin(f*x + e) + sqrt(d^16 + 4*sqrt(d^10/f^4)*d^11*f^2*cos(f
*x + e)*sin(f*x + e) - 2*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 +
sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x
+ e)/cos(f*x + e)))*(sqrt(2)*(d^10/f^4)^(1/4)*d^5*f*sin(f*x + e) + sqrt(2)*
(d^10/f^4)^(3/4)*f^3*cos(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)) - 4*(d
```

```
^11*f^2*cos(f*x + e)^3 - d^11*f^2*cos(f*x + e))*sqrt(d^10/f^4) - (sqrt(2)*(
d^10/f^4)^(1/4)*d^13*f*sin(f*x + e) + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(
f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))/((2*d^16*cos(f*x + e)^2 - d^16
)*sin(f*x + e))) + 3*sqrt(2)*(d^10/f^4)^(1/4)*f*log(729*d^16 + 2916*sqrt(d^
10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) + 1458*(sqrt(2)*(d^10/f^4)^(1/4)
*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(
f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))) - 3*sqrt(2)*(d^10/f^4)^(1/4)*f
*log(729*d^16 + 2916*sqrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) - 14
58*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/
4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))) +
3*sqrt(2)*(d^10/f^4)^(1/4)*f*log(729/16*d^16 + 729/4*sqrt(d^10/f^4)*d^11*f^
2*cos(f*x + e)*sin(f*x + e) + 729/8*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*
x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt
(d*sin(f*x + e)/cos(f*x + e))) - 3*sqrt(2)*(d^10/f^4)^(1/4)*f*log(729/16*d^
16 + 729/4*sqrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) - 729/8*(sqrt(
2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^
3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))))/f
```

giac [A] time = 1.39, size = 240, normalized size = 1.07

$$-\frac{1}{16}\left(\frac{8\sqrt{d\tan\left(fx+e\right)}d^2\tan\left(fx+e\right)}{\left(d^2\tan\left(fx+e\right)^2+d^2\right)f}-\frac{6\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan\left(fx+e\right)}\right)}{2\sqrt{|d|}}\right)}{df}-\frac{6\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{\cdots}\right.}{\cdots}\right)}{df}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^2*(d*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] -1/16*(8*sqrt(d*tan(f*x + e))*d^2*tan(f*x + e)/((d^2*tan(f*x + e)^2 + d^2)*
f) - 6*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2*sq
rt(d*tan(f*x + e)))/sqrt(abs(d)))/(d*f) - 6*sqrt(2)*abs(d)^(3/2)*arctan(-1/
2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(f*x + e)))/sqrt(abs(d)))/(d*
f) + 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(f*x + e) + sqrt(2)*sqrt(d*tan(f*x + e
))*sqrt(abs(d)) + abs(d))/(d*f) - 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(f*x + e)
 - sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(abs(d)) + abs(d))/(d*f))*d^2
```

maple [C] time = 0.55, size = 532, normalized size = 2.36

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(3i\,\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)^2*(d*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/8/f*(-1+cos(f*x+e))*(3*I*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+
e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(
1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/
2*2^(1/2))-3*I*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e
))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*Ellipti
cPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3
*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^
(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f
*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)+3*EllipticPi((-
(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+co
s(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(
-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2*cos(f*x+e)^2*2^(1/2)+2*cos(
f*x+e)*2^(1/2))*cos(f*x+e)^2*(1+cos(f*x+e))^2*(d*sin(f*x+e)/cos(f*x+e))^(5/
2)/sin(f*x+e)^5*2^(1/2)
```

maxima [A] time = 0.73, size = 194, normalized size = 0.86

$$\frac{3\,d^4\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(d\tan\left(fx+e\right)+\sqrt{2}\,\sqrt{d\tan\left(fx+e\right)}\,\sqrt{d}+d\right)}{\sqrt{d}}\right.}{16\,df}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^2*(d*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] 1/16*(3*d^4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(f
*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d)
 - 2*sqrt(d*tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(f*x + e) +
sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(f*x +
 e) - sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d)) - 8*(d*tan(f*x + e
))^(3/2)*d^4/(d^2*tan(f*x + e)^2 + d^2))/(d*f)
```

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

$$\int \cos\left(e+f\,x\right)^2\,{\left(d\,\tan\left(e+f\,x\right)\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)^2*(d*tan(e + f*x))^(5/2),x)
```

```
[Out] int(cos(e + f*x)^2*(d*tan(e + f*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)**2*(d*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.252 $\int \cos^4(e+fx)(d\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=253

$$-\frac{3d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{32\sqrt{2}f}+\frac{3d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}f}+\frac{3d^{5/2}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+\right.}{64\sqrt{2}f}$$

```
[Out] -3/64*d^(5/2)*arctan(1-2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+3/64
*d^(5/2)*arctan(1+2^(1/2)*(d*tan(f*x+e))^(1/2)/d^(1/2))/f*2^(1/2)+3/128*d^(
5/2)*ln(d^(1/2)-2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))/f*2^(1/2)-
3/128*d^(5/2)*ln(d^(1/2)+2^(1/2)*(d*tan(f*x+e))^(1/2)+d^(1/2)*tan(f*x+e))/f
*2^(1/2)+3/16*d*cos(f*x+e)^2*(d*tan(f*x+e))^(3/2)/f-1/4*d*cos(f*x+e)^4*(d*t
an(f*x+e))^(3/2)/f
```

Rubi [A] time = 0.18, antiderivative size = 253, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {2607, 288, 290, 329, 297, 1162, 617, 204, 1165, 628}

$$-\frac{3d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{32\sqrt{2}f}+\frac{3d^{5/2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}+1\right)}{32\sqrt{2}f}+\frac{3d^{5/2}\log\left(\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+\right.}{64\sqrt{2}f}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]^4*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-3*d^(5/2)*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(32*Sqrt[2]
*f) + (3*d^(5/2)*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[e + f*x]])/Sqrt[d]])/(32*Sq
rt[2]*f) + (3*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*x] - Sqrt[2]*Sqrt[d*T
an[e + f*x]]])/(64*Sqrt[2]*f) - (3*d^(5/2)*Log[Sqrt[d] + Sqrt[d]*Tan[e + f*
x] + Sqrt[2]*Sqrt[d*Tan[e + f*x]]])/(64*Sqrt[2]*f) + (3*d*Cos[e + f*x]^2*(d
*Tan[e + f*x])^(3/2))/(16*f) - (d*Cos[e + f*x]^4*(d*Tan[e + f*x])^(3/2))/(4
*f)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
```

```
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
]
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
```

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \cos^4(e+fx)(d\tan(e+fx))^{5/2}\,dx = \frac{\text{Subst}\left(\int \frac{(dx)^{5/2}}{\left(1+x^2\right)^3}\,dx, x, \tan(e+fx)\right)}{f}$$

$$= -\frac{d\cos^4(e+fx)(d\tan(e+fx))^{3/2}}{4f} + \frac{\left(3d^2\right)\text{Subst}\left(\int \frac{\sqrt{dx}}{\left(1+x^2\right)^2}\,dx, x, \tan(e+f\right.}{8f}$$

$$= \frac{3d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{16f} - \frac{d\cos^4(e+fx)(d\tan(e+fx))^{3/2}}{4f} + \frac{(3d}{}$$

$$= \frac{3d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{16f} - \frac{d\cos^4(e+fx)(d\tan(e+fx))^{3/2}}{4f} + \frac{(3d}{}$$

$$= \frac{3d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{16f} - \frac{d\cos^4(e+fx)(d\tan(e+fx))^{3/2}}{4f} - \frac{(3d}{}$$

$$= \frac{3d\cos^2(e+fx)(d\tan(e+fx))^{3/2}}{16f} - \frac{d\cos^4(e+fx)(d\tan(e+fx))^{3/2}}{4f} + \frac{(3d}{}$$

$$= \frac{3d^{5/2}\log\left(\sqrt{d}+\sqrt{d}\tan(e+fx)-\sqrt{2}\sqrt{d\tan(e+fx)}\right)}{64\sqrt{2}f} - \frac{3d^{5/2}\log\left(\sqrt{d}+\right.}{}$$

$$= -\frac{3d^{5/2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{32\sqrt{2}f} + \frac{3d^{5/2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(e+fx)}}{\sqrt{d}}\right)}{32\sqrt{2}f} + \frac{3d^{5}}{}$$

Mathematica [A] time = 0.20, size = 125, normalized size = 0.49

$$-\frac{d^2\sqrt{d\tan(e+fx)}\left(-2\sin(2(e+fx))+2\sin(4(e+fx))+3\sqrt{\sin(2(e+fx))}\csc(e+fx)\sin^{-1}(\cos(e+fx)-\sin\right.}{64f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]^4*(d*Tan[e + f*x])^(5/2),x]
```

```
[Out] -1/64*(d^2*(3*ArcSin[Cos[e + f*x] - Sin[e + f*x]]*Csc[e + f*x]*Sqrt[Sin[2*(
e + f*x)]] + 3*Csc[e + f*x]*Log[Cos[e + f*x] + Sin[e + f*x] + Sqrt[Sin[2*(e
```

```
 + f*x)]]]*Sqrt[Sin[2*(e + f*x)]] - 2*Sin[2*(e + f*x)] + 2*Sin[4*(e + f*x)]
)*Sqrt[d*Tan[e + f*x]])/f
```

fricas [B] time = 123.54, size = 1934, normalized size = 7.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^4*(d*tan(f*x+e))^(5/2),x, algorithm="fricas")

[Out] 1/512*(12*sqrt(2)*(d^10/f^4)^(1/4)*f*arctan((sqrt(d^16 + 4*sqrt(d^10/f^4)*d
^11*f^2*cos(f*x + e)*sin(f*x + e) - 2*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(
f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sq
rt(d*sin(f*x + e)/cos(f*x + e)))*(2*d^8*cos(f*x + e)*sin(f*x + e) + sqrt(d^
10/f^4)*d^3*f^2 + (sqrt(2)*(d^10/f^4)^(1/4)*d^5*f*cos(f*x + e)*sin(f*x + e)
 + sqrt(2)*(d^10/f^4)^(3/4)*f^3*cos(f*x + e)^2)*sqrt(d*sin(f*x + e)/cos(f*x
 + e))) + (sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f
^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x +
e)))/(2*d^16*cos(f*x + e)^2 - d^16)) + 12*sqrt(2)*(d^10/f^4)^(1/4)*f*arctan
(-(sqrt(d^16 + 4*sqrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) + 2*(sqr
t(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*
f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))*(2*d^8*co
s(f*x + e)*sin(f*x + e) + sqrt(d^10/f^4)*d^3*f^2 - (sqrt(2)*(d^10/f^4)^(1/4
)*d^5*f*cos(f*x + e)*sin(f*x + e) + sqrt(2)*(d^10/f^4)^(3/4)*f^3*cos(f*x +
e)^2)*sqrt(d*sin(f*x + e)/cos(f*x + e))) - (sqrt(2)*(d^10/f^4)^(1/4)*d^13*f
*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e
))*sqrt(d*sin(f*x + e)/cos(f*x + e)))/(2*d^16*cos(f*x + e)^2 - d^16)) + 12*
sqrt(2)*(d^10/f^4)^(1/4)*f*arctan(-1/2*(2*d^16*sin(f*x + e) - sqrt(d^16 + 4
*sqrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) + 2*(sqrt(2)*(d^10/f^4)^
(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)
*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))*(sqrt(2)*(d^10/f^4)^(1/4)
*d^5*f*sin(f*x + e) + sqrt(2)*(d^10/f^4)^(3/4)*f^3*cos(f*x + e))*sqrt(d*sin
(f*x + e)/cos(f*x + e)) - 4*(d^11*f^2*cos(f*x + e)^3 - d^11*f^2*cos(f*x + e
))*sqrt(d^10/f^4) + (sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*sin(f*x + e) + sqrt(2)
*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))/
((2*d^16*cos(f*x + e)^2 - d^16)*sin(f*x + e))) + 12*sqrt(2)*(d^10/f^4)^(1/4
)*f*arctan(1/2*(2*d^16*sin(f*x + e) + sqrt(d^16 + 4*sqrt(d^10/f^4)*d^11*f^2
*cos(f*x + e)*sin(f*x + e) - 2*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e
)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*si
n(f*x + e)/cos(f*x + e)))*(sqrt(2)*(d^10/f^4)^(1/4)*d^5*f*sin(f*x + e) + sq
rt(2)*(d^10/f^4)^(3/4)*f^3*cos(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))
- 4*(d^11*f^2*cos(f*x + e)^3 - d^11*f^2*cos(f*x + e))*sqrt(d^10/f^4) - (sqr
t(2)*(d^10/f^4)^(1/4)*d^13*f*sin(f*x + e) + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^
3*cos(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e)))/((2*d^16*cos(f*x + e)^2
- d^16)*sin(f*x + e))) - 3*sqrt(2)*(d^10/f^4)^(1/4)*f*log(729*d^16 + 2916*s
```

```
qrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) + 1458*(sqrt(2)*(d^10/f^4)
^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e
)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))) + 3*sqrt(2)*(d^10/f^4)^(
1/4)*f*log(729*d^16 + 2916*sqrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e
) - 1458*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^
4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e
))) - 3*sqrt(2)*(d^10/f^4)^(1/4)*f*log(729/16*d^16 + 729/4*sqrt(d^10/f^4)*d
^11*f^2*cos(f*x + e)*sin(f*x + e) + 729/8*(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*
cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*d^8*f^3*cos(f*x + e)*sin(f*x + e)
)*sqrt(d*sin(f*x + e)/cos(f*x + e))) + 3*sqrt(2)*(d^10/f^4)^(1/4)*f*log(729
/16*d^16 + 729/4*sqrt(d^10/f^4)*d^11*f^2*cos(f*x + e)*sin(f*x + e) - 729/8*
(sqrt(2)*(d^10/f^4)^(1/4)*d^13*f*cos(f*x + e)^2 + sqrt(2)*(d^10/f^4)^(3/4)*
d^8*f^3*cos(f*x + e)*sin(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e))) - 32*
(4*d^2*cos(f*x + e)^3 - 3*d^2*cos(f*x + e))*sqrt(d*sin(f*x + e)/cos(f*x + e
))*sin(f*x + e))/f
```

giac [A] time = 0.65, size = 268, normalized size = 1.06

$$\frac{1}{128}\,d^2\left(\frac{6\,\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}+2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{|d|}}\right)}{df}+\frac{6\,\sqrt{2}\,|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{|d|}-2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{|d|}}\right)}{df}-\frac{3\,\sqrt{2}\,|d|^{\frac{3}{2}}\,\mathrm{lo}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^4*(d*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] 1/128*d^2*(6*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d))
+ 2*sqrt(d*tan(f*x + e)))/sqrt(abs(d)))/(d*f) + 6*sqrt(2)*abs(d)^(3/2)*arct
an(-1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(f*x + e)))/sqrt(abs(d)
))/(d*f) - 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(f*x + e) + sqrt(2)*sqrt(d*tan(f
*x + e))*sqrt(abs(d)) + abs(d))/(d*f) + 3*sqrt(2)*abs(d)^(3/2)*log(d*tan(f*
x + e) - sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(abs(d)) + abs(d))/(d*f) + 8*(3*s
qrt(d*tan(f*x + e))*d^4*tan(f*x + e)^3 - sqrt(d*tan(f*x + e))*d^4*tan(f*x +
 e))/((d^2*tan(f*x + e)^2 + d^2)^2*f))
```

maple [C] time = 0.48, size = 558, normalized size = 2.21

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(3i\,\mathrm{EllipticPi}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)^4*(d*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/64/f*(-1+cos(f*x+e))*(3*I*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x
+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^
(1/2)*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1
/2*2^(1/2))-3*I*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+
e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*Ellipt
icPi((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-
8*cos(f*x+e)^4*2^(1/2)+8*cos(f*x+e)^3*2^(1/2)+3*EllipticPi((-(-sin(f*x+e)-1
+cos(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(
f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-
1+cos(f*x+e))/sin(f*x+e))^(1/2)+3*EllipticPi((-(-sin(f*x+e)-1+cos(f*x+e))/s
in(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*
((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/
sin(f*x+e))^(1/2)+6*cos(f*x+e)^2*2^(1/2)-6*cos(f*x+e)*2^(1/2))*cos(f*x+e)^2
*(1+cos(f*x+e))^2*(d*sin(f*x+e)/cos(f*x+e))^(5/2)/sin(f*x+e)^5*2^(1/2)
```

maxima [A] time = 0.80, size = 225, normalized size = 0.89

$$\frac{3\,d^4\left(\frac{2\,\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}+2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}+\frac{2\,\sqrt{2}\,\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,\sqrt{d}-2\,\sqrt{d\tan\left(fx+e\right)}\right)}{2\,\sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\,\log\left(d\tan\left(fx+e\right)+\sqrt{2}\,\sqrt{d\tan\left(fx+e\right)}\,\sqrt{d}+d\right)}{\sqrt{d}}\right.}{128\,d f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^4*(d*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] 1/128*(3*d^4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(
f*x + e)))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d
) - 2*sqrt(d*tan(f*x + e)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(f*x + e) +
 sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(f*x
+ e) - sqrt(2)*sqrt(d*tan(f*x + e))*sqrt(d) + d)/sqrt(d)) + 8*(3*(d*tan(f*x
 + e))^(7/2)*d^4 - (d*tan(f*x + e))^(3/2)*d^6)/(d^4*tan(f*x + e)^4 + 2*d^4*
tan(f*x + e)^2 + d^4))/(d*f)
```

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

$$\int \cos\left(e+f\,x\right)^4\,{\left(d\,\tan\left(e+f\,x\right)\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)^4*(d*tan(e + f*x))^(5/2),x)
```

```
[Out] int(cos(e + f*x)^4*(d*tan(e + f*x))^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)**4*(d*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.253 $\int \frac{\sec^5(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=109

$$\frac{2\sec^3(e+fx)\sqrt{d\tan(e+fx)}}{7df}+\frac{4\sec(e+fx)\sqrt{d\tan(e+fx)}}{7df}+\frac{4\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{7f\sqrt{d\tan(e+fx)}}$$

```
[Out] -4/7*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticF(cos(e+1/4*Pi+f
*x),2^(1/2))*sec(f*x+e)*sin(2*f*x+2*e)^(1/2)/f/(d*tan(f*x+e))^(1/2)+4/7*sec
(f*x+e)*(d*tan(f*x+e))^(1/2)/d/f+2/7*sec(f*x+e)^3*(d*tan(f*x+e))^(1/2)/d/f
```

Rubi [A] time = 0.14, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2613, 2614, 2573, 2641}

$$\frac{2\sec^3(e+fx)\sqrt{d\tan(e+fx)}}{7df}+\frac{4\sec(e+fx)\sqrt{d\tan(e+fx)}}{7df}+\frac{4\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{7f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^5/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (4*EllipticF[e - Pi/4 + f*x, 2]*Sec[e + f*x]*Sqrt[Sin[2*e + 2*f*x]])/(7*f*S
qrt[d*Tan[e + f*x]]) + (4*Sec[e + f*x]*Sqrt[d*Tan[e + f*x]])/(7*d*f) + (2*S
ec[e + f*x]^3*Sqrt[d*Tan[e + f*x]])/(7*d*f)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\sec^5(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx = \frac{2\sec^3(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{6}{7}\int \frac{\sec^3(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx$$
$$= \frac{4\sec(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{2\sec^3(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{4}{7}\int \frac{\sec(e+fx)}{\sqrt{d\tan(e+fx)}}\,d$$
$$= \frac{4\sec(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{2\sec^3(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{\left(4\sqrt{\sin(e+fx)}\right)\int \frac{}{\sqrt{co}}}{7\sqrt{\cos(e+fx)}\sqrt{}}$$
$$= \frac{4\sec(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{2\sec^3(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{\left(4\sec(e+fx)\sqrt{\sin(2e}\right.}{7\sqrt{d\,\mathrm{ta}}}$$
$$= \frac{4F\left(e-\frac{\pi}{4}+fx\middle|2\right)\sec(e+fx)\sqrt{\sin(2e+2fx)}}{7f\sqrt{d\tan(e+fx)}} + \frac{4\sec(e+fx)\sqrt{d\tan(e+fx)}}{7df} + \frac{2\sec^3}{}$$

Mathematica [C] time = 0.54, size = 79, normalized size = 0.72

$$\frac{2\sin(e+fx)\left(4\sqrt{\sec^2(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(e+fx)\right)+(\cos(2(e+fx))+2)\sec^4(e+fx)\right)}{7f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^5/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*((2 + Cos[2*(e + f*x)])*Sec[e + f*x]^4 + 4*Hypergeometric2F1[1/4, 1/2, 5
/4, -Tan[e + f*x]^2]*Sqrt[Sec[e + f*x]^2])*Sin[e + f*x])/(7*f*Sqrt[d*Tan[e
+ f*x]])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\tan\left(fx+e\right)}\,\sec\left(fx+e\right)^{5}}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^5/(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*sec(f*x + e)^5/(d*tan(f*x + e)), x)
```

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

$$\int \frac{\sec\left(fx+e\right)^{5}}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^5/(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^5/sqrt(d*tan(f*x + e)), x)
```

maple [A] time = 0.71, size = 224, normalized size = 2.06

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(4\sin\left(fx+e\right)\mathrm{EllipticF}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(\right.}{\sin\left(fx+e\right)}}\right.}{7f\,s}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^5/(d*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/7/f*(-1+cos(f*x+e))*(4*sin(f*x+e)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))
/sin(f*x+e))^(1/2),1/2*2^(1/2))*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos
(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+
e))^(1/2)*cos(f*x+e)^3-2*cos(f*x+e)^3*2^(1/2)+2*cos(f*x+e)^2*2^(1/2)-cos(f*
x+e)*2^(1/2)+2^(1/2))*(1+cos(f*x+e))^2/sin(f*x+e)^3/cos(f*x+e)^4/(d*sin(f*x
+e)/cos(f*x+e))^(1/2)*2^(1/2)
```

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

$$\int \frac{\sec\left(fx+e\right)^{5}}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^5/(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(sec(f*x + e)^5/sqrt(d*tan(f*x + e)), x)
```

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

$$\int \frac{1}{\cos\left(e+f\,x\right)^5\,\sqrt{d\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(e + f*x)^5*(d*tan(e + f*x))^(1/2)),x)
[Out] int(1/(cos(e + f*x)^5*(d*tan(e + f*x))^(1/2)), x)
```

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

$$\int \frac{\sec^5\left(e+fx\right)}{\sqrt{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**5/(d*tan(f*x+e))**(1/2),x)
[Out] Integral(sec(e + f*x)**5/sqrt(d*tan(e + f*x)), x)
```

3.254 $\int \frac{\sec^3(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=79

$$\frac{2\sec(e+fx)\sqrt{d\tan(e+fx)}}{3df}+\frac{2\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{3f\sqrt{d\tan(e+fx)}}$$

```
[Out] -2/3*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticF(cos(e+1/4*Pi+f
*x),2^(1/2))*sec(f*x+e)*sin(2*f*x+2*e)^(1/2)/f/(d*tan(f*x+e))^(1/2)+2/3*sec
(f*x+e)*(d*tan(f*x+e))^(1/2)/d/f
```

Rubi [A] time = 0.10, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2613, 2614, 2573, 2641}

$$\frac{2\sec(e+fx)\sqrt{d\tan(e+fx)}}{3df}+\frac{2\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{3f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^3/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*EllipticF[e - Pi/4 + f*x, 2]*Sec[e + f*x]*Sqrt[Sin[2*e + 2*f*x]])/(3*f*S
qrt[d*Tan[e + f*x]]) + (2*Sec[e + f*x]*Sqrt[d*Tan[e + f*x]])/(3*d*f)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sec^3(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx &= \frac{2\sec(e+fx)\sqrt{d\tan(e+fx)}}{3df}+\frac{2}{3}\int \frac{\sec(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx \\
&= \frac{2\sec(e+fx)\sqrt{d\tan(e+fx)}}{3df}+\frac{\left(2\sqrt{\sin(e+fx)}\right)\int \frac{1}{\sqrt{\cos(e+fx)}\sqrt{\sin(e+fx)}}\,dx}{3\sqrt{\cos(e+fx)}\sqrt{d\tan(e+fx)}} \\
&= \frac{2\sec(e+fx)\sqrt{d\tan(e+fx)}}{3df}+\frac{\left(2\sec(e+fx)\sqrt{\sin(2e+2fx)}\right)\int \frac{1}{\sqrt{\sin(2e+2fx)}}\,dx}{3\sqrt{d\tan(e+fx)}} \\
&= \frac{2F\left(e-\frac{\pi}{4}+fx\middle|2\right)\sec(e+fx)\sqrt{\sin(2e+2fx)}}{3f\sqrt{d\tan(e+fx)}}+\frac{2\sec(e+fx)\sqrt{d\tan(e+fx)}}{3df}
\end{aligned}
$$

Mathematica [C] time = 0.27, size = 68, normalized size = 0.86

$$\frac{2\sin(e+fx)\left(2\sqrt{\sec^2(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2(e+fx)\right)+\sec^2(e+fx)\right)}{3f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^3/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(Sec[e + f*x]^2 + 2*Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[e + f*x]^2]*Sq
rt[Sec[e + f*x]^2])*Sin[e + f*x])/(3*f*Sqrt[d*Tan[e + f*x]])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(fx+e\right)}\sec\left(fx+e\right)^3}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^3/(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*sec(f*x + e)^3/(d*tan(f*x + e)), x)
```

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

$$\int \frac{\sec(fx+e)^3}{\sqrt{d\tan(fx+e)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^3/(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^3/sqrt(d*tan(f*x + e)), x)
```

maple [B] time = 0.63, size = 196, normalized size = 2.48

$$-\frac{(-1+\cos(fx+e))\left(2\cos(fx+e)\sin(fx+e)\sqrt{\frac{-1+\cos(fx+e)}{\sin(fx+e)}}\,\sqrt{\frac{-1+\cos(fx+e)+\sin(fx+e)}{\sin(fx+e)}}\,\sqrt{-\frac{-\sin(fx+e)-1+\cos(fx+}{\sin(fx+e)}}\right.}{3f\cos(fx+e)^2\sqrt{\frac{d\sin(fx+e)}{\cos(fx+e)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^3/(d*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/3/f*(-1+cos(f*x+e))*(2*cos(f*x+e)*sin(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e)
)^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(
f*x+e))/sin(f*x+e))^(1/2)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e)
)^(1/2),1/2*2^(1/2))-cos(f*x+e)*2^(1/2)+2^(1/2))*(1+cos(f*x+e))^2/cos(f*x+e
)^2/(d*sin(f*x+e)/cos(f*x+e))^(1/2)/sin(f*x+e)^3*2^(1/2)
```

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

$$\int \frac{\sec(fx+e)^3}{\sqrt{d\tan(fx+e)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^3/(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sec(f*x + e)^3/sqrt(d*tan(f*x + e)), x)
```

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

$$\int \frac{1}{\cos\left(e+f\,x\right)^3\,\sqrt{d\,\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(e + f*x)^3*(d*tan(e + f*x))^(1/2)),x)
[Out] int(1/(cos(e + f*x)^3*(d*tan(e + f*x))^(1/2)), x)
```

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

$$\int \frac{\sec^3\left(e+fx\right)}{\sqrt{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**3/(d*tan(f*x+e))**(1/2),x)
[Out] Integral(sec(e + f*x)**3/sqrt(d*tan(e + f*x)), x)
```

3.255 $\int \frac{\sec(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{f\sqrt{d\tan(e+fx)}}$$

```
[Out] -(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticF(cos(e+1/4*Pi+f*x),
2^(1/2))*sec(f*x+e)*sin(2*f*x+2*e)^(1/2)/f/(d*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2614, 2573, 2641}

$$\frac{\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (EllipticF[e - Pi/4 + f*x, 2]*Sec[e + f*x]*Sqrt[Sin[2*e + 2*f*x]])/(f*Sqrt[
d*Tan[e + f*x]])
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\sec(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx = \frac{\sqrt{\sin(e+fx)}\int \frac{1}{\sqrt{\cos(e+fx)}\sqrt{\sin(e+fx)}}\,dx}{\sqrt{\cos(e+fx)}\sqrt{d\tan(e+fx)}}$$
$$= \frac{\left(\sec(e+fx)\sqrt{\sin(2e+2fx)}\right)\int \frac{1}{\sqrt{\sin(2e+2fx)}}\,dx}{\sqrt{d\tan(e+fx)}}$$
$$= \frac{F\left(e-\frac{\pi}{4}+fx\middle|2\right)\sec(e+fx)\sqrt{\sin(2e+2fx)}}{f\sqrt{d\tan(e+fx)}}$$

Mathematica [C] time = 0.13, size = 77, normalized size = 1.64

$$-\frac{2\sqrt[4]{-1}\sqrt{\tan(e+fx)}\sec^3(e+fx)F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(e+fx)}\right)\middle|-1\right)}{f\left(\tan^2(e+fx)+1\right)^{3/2}\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (-2*(-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[e + f*x]]], -1]*Sec[
e + f*x]^3*Sqrt[Tan[e + f*x]])/(f*Sqrt[d*Tan[e + f*x]]*(1 + Tan[e + f*x]^2)
^(3/2))
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(fx+e\right)}\sec\left(fx+e\right)}{d\tan\left(fx+e\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)/(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*sec(f*x + e)/(d*tan(f*x + e)), x)
```

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

$$\int \frac{\sec\left(fx+e\right)}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)/(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)/sqrt(d*tan(f*x + e)), x)
```

maple [B] time = 0.44, size = 167, normalized size = 3.55

$$-\frac{\mathrm{EllipticF}\left(\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}, \frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\left(-1\right.}{f\sin\left(fx+e\right)^{2}\cos\left(fx+e\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)/(d*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/f*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*
((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^
(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*(-1+cos(f*x+e))/sin(f*
x+e)^2/cos(f*x+e)*(1+cos(f*x+e))^2/(d*sin(f*x+e)/cos(f*x+e))^(1/2)*2^(1/2)
```

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

$$\int \frac{\sec\left(fx+e\right)}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)/(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sec(f*x + e)/sqrt(d*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\cos\left(e+f\,x\right)\,\sqrt{d\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(e + f*x)*(d*tan(e + f*x))^(1/2)),x)
```

```
[Out] int(1/(cos(e + f*x)*(d*tan(e + f*x))^(1/2)), x)
```

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

$$\int \frac{\sec\left(e+fx\right)}{\sqrt{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)/(d*tan(f*x+e))**(1/2),x)
[Out] Integral(sec(e + f*x)/sqrt(d*tan(e + f*x)), x)
```

3.256 $\int \frac{\cos(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=76

$$\frac{\cos(e+fx)\sqrt{d\tan(e+fx)}}{df}+\frac{\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{2f\sqrt{d\tan(e+fx)}}$$

```
[Out] -1/2*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticF(cos(e+1/4*Pi+f
*x),2^(1/2))*sec(f*x+e)*sin(2*f*x+2*e)^(1/2)/f/(d*tan(f*x+e))^(1/2)+cos(f*x
+e)*(d*tan(f*x+e))^(1/2)/d/f
```

Rubi [A] time = 0.09, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2612, 2614, 2573, 2641}

$$\frac{\cos(e+fx)\sqrt{d\tan(e+fx)}}{df}+\frac{\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{2f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (EllipticF[e - Pi/4 + f*x, 2]*Sec[e + f*x]*Sqrt[Sin[2*e + 2*f*x]])/(2*f*Sqr
t[d*Tan[e + f*x]]) + (Cos[e + f*x]*Sqrt[d*Tan[e + f*x]])/(d*f)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
```

```
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\cos(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx &= \frac{\cos(e+fx)\sqrt{d\tan(e+fx)}}{df}+\frac{1}{2}\int \frac{\sec(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx\\ &= \frac{\cos(e+fx)\sqrt{d\tan(e+fx)}}{df}+\frac{\sqrt{\sin(e+fx)}\int \frac{1}{\sqrt{\cos(e+fx)}\sqrt{\sin(e+fx)}}\,dx}{2\sqrt{\cos(e+fx)}\sqrt{d\tan(e+fx)}}\\ &= \frac{\cos(e+fx)\sqrt{d\tan(e+fx)}}{df}+\frac{\left(\sec(e+fx)\sqrt{\sin(2e+2fx)}\right)\int \frac{1}{\sqrt{\sin(2e+2fx)}}\,dx}{2\sqrt{d\tan(e+fx)}}\\ &= \frac{F\left(e-\frac{\pi}{4}+fx\middle|2\right)\sec(e+fx)\sqrt{\sin(2e+2fx)}}{2f\sqrt{d\tan(e+fx)}}+\frac{\cos(e+fx)\sqrt{d\tan(e+fx)}}{df}\end{aligned}$$

Mathematica [C] time = 0.55, size = 126, normalized size = 1.66

$$\frac{\cos(2(e+fx))\sqrt{\tan(e+fx)}\,\sec(e+fx)\left(-\sqrt{\tan(e+fx)}\sqrt{\sec^2(e+fx)}+\sqrt[4]{-1}\sec^2(e+fx)F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{t\right.\right.}{f\left(\tan^2(e+fx)-1\right)\sqrt{\sec^2(e+fx)}\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (Cos[2*(e + f*x)]*Sec[e + f*x]*((-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*S
qrt[Tan[e + f*x]]], -1]*Sec[e + f*x]^2 - Sqrt[Sec[e + f*x]^2]*Sqrt[Tan[e +
f*x]])*Sqrt[Tan[e + f*x]])/(f*Sqrt[Sec[e + f*x]^2]*Sqrt[d*Tan[e + f*x]]*(-1
 + Tan[e + f*x]^2))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sqrt{d\tan\left(fx+e\right)}\cos\left(fx+e\right)}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)/(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(d*tan(f*x + e))*cos(f*x + e)/(d*tan(f*x + e)), x)
```

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

$$\int \frac{\cos\left(fx+e\right)}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)/(d*tan(f*x+e))^(1/2),x, algorithm="giac")
[Out] integrate(cos(f*x + e)/sqrt(d*tan(f*x + e)), x)
```

maple [B] time = 0.49, size = 199, normalized size = 2.62

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(-\sin\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \mathrm{EllipticF}\left(\right.\right.}{2f\cos\left(fx+e\right)\sqrt{\frac{d\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)/(d*tan(f*x+e))^(1/2),x)
[Out] 1/2/f*(-1+cos(f*x+e))*(-sin(f*x+e)*((-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((-1+
cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f
*x+e))^(1/2)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2),1/2*2
^(1/2))+cos(f*x+e)^2*2^(1/2)-cos(f*x+e)*2^(1/2))*(1+cos(f*x+e))^2/cos(f*x+e
)/(d*sin(f*x+e)/cos(f*x+e))^(1/2)/sin(f*x+e)^3*2^(1/2)
```

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

$$\int \frac{\cos\left(fx+e\right)}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)/(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(cos(f*x + e)/sqrt(d*tan(f*x + e)), x)
```

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

$$\int \frac{\cos\left(e+f\,x\right)}{\sqrt{d\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)/(d*tan(e + f*x))^(1/2),x)
[Out] int(cos(e + f*x)/(d*tan(e + f*x))^(1/2), x)
```

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

$$\int \frac{\cos\left(e+fx\right)}{\sqrt{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)/(d*tan(f*x+e))**(1/2),x)
[Out] Integral(cos(e + f*x)/sqrt(d*tan(e + f*x)), x)
```

3.257 $\int \frac{\cos^3(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=109

$$\frac{\cos^3(e+fx)\sqrt{d\tan(e+fx)}}{3df}+\frac{5\cos(e+fx)\sqrt{d\tan(e+fx)}}{6df}+\frac{5\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{12f\sqrt{d\tan(e+fx)}}$$

```
[Out] -5/12*(sin(e+1/4*Pi+f*x)^2)^(1/2)/sin(e+1/4*Pi+f*x)*EllipticF(cos(e+1/4*Pi+
f*x),2^(1/2))*sec(f*x+e)*sin(2*f*x+2*e)^(1/2)/f/(d*tan(f*x+e))^(1/2)+5/6*co
s(f*x+e)*(d*tan(f*x+e))^(1/2)/d/f+1/3*cos(f*x+e)^3*(d*tan(f*x+e))^(1/2)/d/f
```

Rubi [A] time = 0.13, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2612, 2614, 2573, 2641}

$$\frac{\cos^3(e+fx)\sqrt{d\tan(e+fx)}}{3df}+\frac{5\cos(e+fx)\sqrt{d\tan(e+fx)}}{6df}+\frac{5\sqrt{\sin(2e+2fx)}\,\sec(e+fx)F\left(e+fx-\frac{\pi}{4}\middle|2\right)}{12f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[e + f*x]^3/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (5*EllipticF[e - Pi/4 + f*x, 2]*Sec[e + f*x]*Sqrt[Sin[2*e + 2*f*x]])/(12*f*
Sqrt[d*Tan[e + f*x]]) + (5*Cos[e + f*x]*Sqrt[d*Tan[e + f*x]])/(6*d*f) + (Co
s[e + f*x]^3*Sqrt[d*Tan[e + f*x]])/(3*d*f)
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cos^3(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx &= \frac{\cos^3(e+fx)\sqrt{d\tan(e+fx)}}{3df} + \frac{5}{6}\int \frac{\cos(e+fx)}{\sqrt{d\tan(e+fx)}}\,dx \\
&= \frac{5\cos(e+fx)\sqrt{d\tan(e+fx)}}{6df} + \frac{\cos^3(e+fx)\sqrt{d\tan(e+fx)}}{3df} + \frac{5}{12}\int \frac{\sec(e+fx)}{\sqrt{d\tan(e+fx)}}\,d\text{:} \\
&= \frac{5\cos(e+fx)\sqrt{d\tan(e+fx)}}{6df} + \frac{\cos^3(e+fx)\sqrt{d\tan(e+fx)}}{3df} + \frac{\left(5\sqrt{\sin(e+fx)}\right)\int \frac{}{\sqrt{\cos}}}{12\sqrt{\cos(e+fx)}\sqrt{a}} \\
&= \frac{5\cos(e+fx)\sqrt{d\tan(e+fx)}}{6df} + \frac{\cos^3(e+fx)\sqrt{d\tan(e+fx)}}{3df} + \frac{\left(5\sec(e+fx)\sqrt{\sin(2e+}\right.}{12\sqrt{d\tan}} \\
&= \frac{5F\left(e-\frac{\pi}{4}+fx\middle|2\right)\sec(e+fx)\sqrt{\sin(2e+2fx)}}{12f\sqrt{d\tan(e+fx)}} + \frac{5\cos(e+fx)\sqrt{d\tan(e+fx)}}{6df} + \frac{\cos^3(e}{}
\end{aligned}$$

Mathematica [C] time = 1.01, size = 94, normalized size = 0.86

$$\frac{11\sin(e+fx)+\sin(3(e+fx))-10\sqrt[4]{-1}\,\cos(e+fx)\sqrt{\tan(e+fx)}\,\sqrt{\sec^2(e+fx)}\,F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\,\sqrt{\tan(e+fx)}\right.\right.}{12f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[e + f*x]^3/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (11*Sin[e + f*x] + Sin[3*(e + f*x)] - 10*(-1)^(1/4)*Cos[e + f*x]*EllipticF[
I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[e + f*x]]], -1]*Sqrt[Sec[e + f*x]^2]*Sqrt[Tan
[e + f*x]])/(12*f*Sqrt[d*Tan[e + f*x]])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(fx+e\right)}\cos\left(fx+e\right)^{3}}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^3/(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*cos(f*x + e)^3/(d*tan(f*x + e)), x)
```

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

$$\int\frac{\cos\left(fx+e\right)^{3}}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^3/(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(cos(f*x + e)^3/sqrt(d*tan(f*x + e)), x)
```

maple [A] time = 0.58, size = 226, normalized size = 2.07

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(2\left(\cos^{4}\left(fx+e\right)\right)\sqrt{2}-5\sin\left(fx+e\right)\sqrt{\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{-\sin\left(fx+e\right)\cdots}{\sin\left(\cdots\right.}}\cdots\right.}{12f\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(f*x+e)^3/(d*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/12/f*(-1+cos(f*x+e))*(2*cos(f*x+e)^4*2^(1/2)-5*sin(f*x+e)*((-1+cos(f*x+e)
)/sin(f*x+e))^(1/2)*((-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(-sin(f
*x+e)-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticF((-(-sin(f*x+e)-1+cos(f*x+e)
)/sin(f*x+e))^(1/2),1/2*2^(1/2))-2*cos(f*x+e)^3*2^(1/2)+5*cos(f*x+e)^2*2^(1
/2)-5*cos(f*x+e)*2^(1/2))*(1+cos(f*x+e))^2/cos(f*x+e)/(d*sin(f*x+e)/cos(f*x
+e))^(1/2)/sin(f*x+e)^3*2^(1/2)
```

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

$$\int\frac{\cos\left(fx+e\right)^{3}}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)^3/(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(cos(f*x + e)^3/sqrt(d*tan(f*x + e)), x)
```

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

$$\int \frac{\cos\left(e+f\,x\right)^3}{\sqrt{d\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(e + f*x)^3/(d*tan(e + f*x))^(1/2),x)
[Out] int(cos(e + f*x)^3/(d*tan(e + f*x))^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(f*x+e)**3/(d*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.258 $\int \frac{\sec^6(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=65

$$\frac{2(d\tan(a+bx))^{7/2}}{7bd^5}+\frac{4(d\tan(a+bx))^{3/2}}{3bd^3}-\frac{2}{bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2/b/d/(d*tan(b*x+a))^(1/2)+4/3*(d*tan(b*x+a))^(3/2)/b/d^3+2/7*(d*tan(b*x+a
))^(7/2)/b/d^5
```

Rubi [A] time = 0.06, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 270}

$$\frac{2(d\tan(a+bx))^{7/2}}{7bd^5}+\frac{4(d\tan(a+bx))^{3/2}}{3bd^3}-\frac{2}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^6/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -2/(b*d*Sqrt[d*Tan[a + b*x]]) + (4*(d*Tan[a + b*x])^(3/2))/(3*b*d^3) + (2*(
d*Tan[a + b*x])^(7/2))/(7*b*d^5)
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \frac{\sec^6(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{(1+x^2)^2}{(dx)^{3/2}}\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{(dx)^{3/2}} + \frac{2\sqrt{dx}}{d^2} + \frac{(dx)^{5/2}}{d^4}\right) dx, x, \tan(a+bx)\right)}{b}$$
$$= -\frac{2}{bd\sqrt{d\tan(a+bx)}} + \frac{4(d\tan(a+bx))^{3/2}}{3bd^3} + \frac{2(d\tan(a+bx))^{7/2}}{7bd^5}$$

Mathematica [A] time = 0.21, size = 45, normalized size = 0.69

$$\frac{\tan^2(a+bx)\left(6\sec^2(a+bx)+22\right)-42}{21bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^6/(d*Tan[a + b*x])^(3/2),x]
[Out] (-42 + (22 + 6*Sec[a + b*x]^2)*Tan[a + b*x]^2)/(21*b*d*Sqrt[d*Tan[a + b*x]]
)
```

fricas [A] time = 0.56, size = 64, normalized size = 0.98

$$-\frac{2\left(32\cos(bx+a)^4 - 8\cos(bx+a)^2 - 3\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{21\,bd^2\cos(bx+a)^3\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
[Out] -2/21*(32*cos(b*x + a)^4 - 8*cos(b*x + a)^2 - 3)*sqrt(d*sin(b*x + a)/cos(b*
x + a))/(b*d^2*cos(b*x + a)^3*sin(b*x + a))
```

giac [A] time = 2.82, size = 80, normalized size = 1.23

$$-\frac{2\left(\frac{21}{\sqrt{d\tan(bx+a)}\,b} - \frac{3\sqrt{d\tan(bx+a)}\,b^6d^{27}\tan(bx+a)^3 + 14\sqrt{d\tan(bx+a)}\,b^6d^{27}\tan(bx+a)}{b^7d^{28}}\right)}{21\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] -2/21*(21/(sqrt(d*tan(b*x + a))*b) - (3*sqrt(d*tan(b*x + a))*b^6*d^27*tan(b
*x + a)^3 + 14*sqrt(d*tan(b*x + a))*b^6*d^27*tan(b*x + a))/(b^7*d^28))/d
```

maple [A] time = 0.68, size = 60, normalized size = 0.92

$$-\frac{2\left(32\left(\cos^{4}\left(bx+a\right)\right)-8\left(\cos^{2}\left(bx+a\right)\right)-3\right)\sin\left(bx+a\right)}{21b\cos\left(bx+a\right)^{5}\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^6/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -2/21/b*(32*cos(b*x+a)^4-8*cos(b*x+a)^2-3)*sin(b*x+a)/cos(b*x+a)^5/(d*sin(b
*x+a)/cos(b*x+a))^(3/2)
```

maxima [A] time = 0.44, size = 54, normalized size = 0.83

$$-\frac{2\left(\frac{21}{\sqrt{d\tan(bx+a)}}-\frac{3\left(d\tan(bx+a)\right)^{\frac{7}{2}}+14\left(d\tan(bx+a)\right)^{\frac{3}{2}}d^{2}}{d^{4}}\right)}{21\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -2/21*(21/sqrt(d*tan(b*x + a)) - (3*(d*tan(b*x + a))^(7/2) + 14*(d*tan(b*x
+ a))^(3/2)*d^2)/d^4)/(b*d)
```

mupad [B] time = 6.88, size = 268, normalized size = 4.12

$$-\frac{\left(\frac{20i}{21\,b\,d^{2}}+\frac{e^{a\,2i+b\,x\,2i}\,64i}{21\,b\,d^{2}}\right)\sqrt{-\frac{d\left(e^{a\,2i+b\,x\,2i}\,1i-i\right)}{e^{a\,2i+b\,x\,2i}+1}}}{e^{a\,2i+b\,x\,2i}-1}+\frac{\sqrt{-\frac{d\left(e^{a\,2i+b\,x\,2i}\,1i-i\right)}{e^{a\,2i+b\,x\,2i}+1}}\,20i}{21\,b\,d^{2}\,\left(e^{a\,2i+b\,x\,2i}+1\right)}+\frac{\sqrt{-\frac{d\left(e^{a\,2i+b\,x\,2i}\,1i-i\right)}{e^{a\,2i+b\,x\,2i}+1}}\,24i}{7\,b\,d^{2}\left(e^{a\,2i+b\,x\,2i}+1\right)^{2}}-\frac{\sqrt{-\frac{d\left(e^{a\,2i+b\,x\,2i}\,1i-i\right)}{e^{a\,2i+b\,x\,2i}+1}}\;1\cdots}{7\,b\,d^{2}\left(e^{a\,2i+b\,x\,2i}+1\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)^6*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] ((-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*20i)/(2
1*b*d^2*(exp(a*2i + b*x*2i) + 1)) - ((20i/(21*b*d^2) + (exp(a*2i + b*x*2i)*
64i)/(21*b*d^2))*(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1
))^(1/2))/(exp(a*2i + b*x*2i) - 1) + ((-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(e
xp(a*2i + b*x*2i) + 1))^(1/2)*24i)/(7*b*d^2*(exp(a*2i + b*x*2i) + 1)^2) - (
```

```
(-(d*(exp(a*2i + b*x*2i)*1i - 1i))/(exp(a*2i + b*x*2i) + 1))^(1/2)*16i)/(7*
b*d^2*(exp(a*2i + b*x*2i) + 1)^3)
```

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

$$\int \frac{\sec^6(a+bx)}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**6/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(sec(a + b*x)**6/(d*tan(a + b*x))**(3/2), x)
```

3.259 $\int \frac{\sec^4(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=43

$$\frac{2(d\tan(a+bx))^{3/2}}{3bd^3}-\frac{2}{bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2/b/d/(d*tan(b*x+a))^(1/2)+2/3*(d*tan(b*x+a))^(3/2)/b/d^3
```

Rubi [A] time = 0.05, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 14}

$$\frac{2(d\tan(a+bx))^{3/2}}{3bd^3}-\frac{2}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^4/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -2/(b*d*Sqrt[d*Tan[a + b*x]]) + (2*(d*Tan[a + b*x])^(3/2))/(3*b*d^3)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] && !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \frac{\sec^4(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1+x^2}{(dx)^{3/2}}\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{(dx)^{3/2}} + \frac{\sqrt{dx}}{d^2}\right)dx, x, \tan(a+bx)\right)}{b}$$
$$= -\frac{2}{bd\sqrt{d\tan(a+bx)}} + \frac{2(d\tan(a+bx))^{3/2}}{3bd^3}$$

Mathematica [A] time = 0.10, size = 32, normalized size = 0.74

$$\frac{2\left(\tan^2(a+bx)-3\right)}{3bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^4/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*(-3 + Tan[a + b*x]^2))/(3*b*d*Sqrt[d*Tan[a + b*x]])
```

fricas [A] time = 0.53, size = 54, normalized size = 1.26

$$-\frac{2\left(4\cos(bx+a)^2-1\right)\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}}{3\,bd^2\cos(bx+a)\sin(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] -2/3*(4*cos(b*x + a)^2 - 1)*sqrt(d*sin(b*x + a)/cos(b*x + a))/(b*d^2*cos(b*
x + a)*sin(b*x + a))
```

giac [A] time = 2.22, size = 44, normalized size = 1.02

$$\frac{2\left(\frac{\sqrt{d\tan(bx+a)}\tan(bx+a)}{bd} - \frac{3}{\sqrt{d\tan(bx+a)}\,b}\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*(sqrt(d*tan(b*x + a))*tan(b*x + a)/(b*d) - 3/(sqrt(d*tan(b*x + a))*b))/
d
```

maple [A] time = 0.60, size = 50, normalized size = 1.16

$$-\frac{2\left(4\left(\cos^{2}\left(bx+a\right)\right)-1\right)\sin\left(bx+a\right)}{3b\cos\left(bx+a\right)^{3}\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^4/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -2/3/b*(4*cos(b*x+a)^2-1)*sin(b*x+a)/cos(b*x+a)^3/(d*sin(b*x+a)/cos(b*x+a))
^(3/2)
```

maxima [A] time = 0.72, size = 36, normalized size = 0.84

$$-\frac{2\left(\frac{3}{\sqrt{d\tan(bx+a)}}-\frac{(d\tan(bx+a))^{\frac{3}{2}}}{d^{2}}\right)}{3\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3/sqrt(d*tan(b*x + a)) - (d*tan(b*x + a))^(3/2)/d^2)/(b*d)
```

mupad [B] time = 2.97, size = 64, normalized size = 1.49

$$-\frac{4\,\left(\sin\left(2\,a+2\,b\,x\right)+\sin\left(4\,a+4\,b\,x\right)\right)\,\sqrt{\frac{d\,\sin(2\,a+2\,b\,x)}{\cos(2\,a+2\,b\,x)+1}}}{3\,b\,d^{2}\,\sin\left(2\,a+2\,b\,x\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)^4*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] -(4*(sin(2*a + 2*b*x) + sin(4*a + 4*b*x))*((d*sin(2*a + 2*b*x))/(cos(2*a +
2*b*x) + 1))^(1/2))/(3*b*d^2*sin(2*a + 2*b*x)^2)
```

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

$$\int\frac{\sec^{4}\left(a+bx\right)}{\left(d\tan\left(a+bx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**4/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(sec(a + b*x)**4/(d*tan(a + b*x))**(3/2), x)
```

3.260 $\int \frac{\sec^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=20

$$-\frac{2}{bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2/b/d/(d*tan(b*x+a))^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2607, 32}

$$-\frac{2}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] -2/(b*d*Sqrt[d*Tan[a + b*x]])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] && !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\begin{aligned}\int \frac{\sec^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{1}{(dx)^{3/2}}\,dx, x, \tan(a+bx)\right)}{b}\\ &= -\frac{2}{bd\sqrt{d\tan(a+bx)}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 20, normalized size = 1.00

$$-\frac{2}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
[Out] -2/(b*d*Sqrt[d*Tan[a + b*x]])
```

fricas [B] time = 0.57, size = 40, normalized size = 2.00

$$-\frac{2\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos\left(bx+a\right)}{bd^2\sin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
[Out] -2*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)/(b*d^2*sin(b*x + a))
```

giac [A] time = 1.17, size = 18, normalized size = 0.90

$$-\frac{2}{\sqrt{d\tan\left(bx+a\right)}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
[Out] -2/(sqrt(d*tan(b*x + a))*b*d)
```

maple [A] time = 0.11, size = 19, normalized size = 0.95

$$-\frac{2}{bd\sqrt{d\tan\left(bx+a\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^2/(d*tan(b*x+a))^(3/2),x)
[Out] -2/b/d/(d*tan(b*x+a))^(1/2)
```

maxima [A] time = 0.41, size = 18, normalized size = 0.90

$$-\frac{2}{\sqrt{d\tan\left(bx+a\right)}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -2/(sqrt(d*tan(b*x + a))*b*d)
```

mupad [B] time = 2.57, size = 51, normalized size = 2.55

$$-\frac{\sin\left(2\,a+2\,b\,x\right)\,\sqrt{\frac{d\,\sin(2\,a+2\,b\,x)}{\cos(2\,a+2\,b\,x)+1}}}{b\,d^2\,\sin\left(a+b\,x\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)^2*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] -(sin(2*a + 2*b*x)*((d*sin(2*a + 2*b*x))/(cos(2*a + 2*b*x) + 1))^(1/2))/(b*
d^2*sin(a + b*x)^2)
```

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

$$\int \frac{\sec^2\left(a+bx\right)}{\left(d\tan\left(a+bx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**2/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(sec(a + b*x)**2/(d*tan(a + b*x))**(3/2), x)
```

3.261 $\int \frac{1}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=212

$$\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}bd^{3/2}}-\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{\sqrt{2}bd^{3/2}}-\frac{\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{2\sqrt{2}bd^{3/2}}+\frac{\log\left(\cdots\right.}{}$$

```
[Out] 1/2*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)-1/2*ar
ctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)-1/4*ln(d^(1/
2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)*2^(1/2)+1/4*l
n(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)*2^(1/2
)-2/b/d/(d*tan(b*x+a))^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {3474, 3476, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}bd^{3/2}}-\frac{\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{\sqrt{2}bd^{3/2}}-\frac{\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{2\sqrt{2}bd^{3/2}}+\frac{\log\left(\cdots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[a + b*x])^(-3/2),x]
```

```
[Out] ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]]/(Sqrt[2]*b*d^(3/2)) - Ar
cTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]]/(Sqrt[2]*b*d^(3/2)) - Log[
Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b*x]]]/(2*Sqrt[2]*b
*d^(3/2)) + Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqrt[2]*Sqrt[d*Tan[a + b*x
]]]/(2*Sqrt[2]*b*d^(3/2)) - 2/(b*d*Sqrt[d*Tan[a + b*x]])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 3474

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(b*Tan[c + d*x]
)^(n + 1)/(b*d*(n + 1)), x] - Dist[1/b^2, Int[(b*Tan[c + d*x])^(n + 2), x],
 x] /; FreeQ[{b, c, d}, x] && LtQ[n, -1]
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] &&  !
```

IntegerQ[n]

Rubi steps

$$\int \frac{1}{(d\tan(a+bx))^{3/2}}\,dx = -\frac{2}{bd\sqrt{d\tan(a+bx)}} - \frac{\int \sqrt{d\tan(a+bx)}\,dx}{d^2}$$

$$= -\frac{2}{bd\sqrt{d\tan(a+bx)}} - \frac{\text{Subst}\left(\int \frac{\sqrt{x}}{d^2+x^2}\,dx, x, d\tan(a+bx)\right)}{bd}$$

$$= -\frac{2}{bd\sqrt{d\tan(a+bx)}} - \frac{2\,\text{Subst}\left(\int \frac{x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{bd}$$

$$= -\frac{2}{bd\sqrt{d\tan(a+bx)}} + \frac{\text{Subst}\left(\int \frac{d-x^2}{d^2+x^4}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{bd} - \frac{\text{Subst}\left(\int \frac{d+x^2}{d^2+x^4}\,dx, x, \sqrt{\right.}}{bd}$$

$$= -\frac{2}{bd\sqrt{d\tan(a+bx)}} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}\,x-x^2}\,dx, x, \sqrt{d\tan(a+bx)}\right)}{2\sqrt{2}\,bd^{3/2}} - \frac{\text{Subst}\left(\int \frac{\sqrt{2}}{-d+\sqrt{}}\right.}{}$$

$$= -\frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{2\sqrt{2}\,bd^{3/2}} + \frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)+\sqrt{}\right.}{2\sqrt{2}\,bd^{3/2}}$$

$$= \frac{\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}\,bd^{3/2}} - \frac{\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{\sqrt{2}\,bd^{3/2}} - \frac{\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\right.}{2\sqrt{2}\,bd^{3}}$$

Mathematica [C] time = 0.04, size = 38, normalized size = 0.18

$$-\frac{2\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\tan^2(a+bx)\right)}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[a + b*x])^(-3/2),x]
```

```
[Out] (-2*Hypergeometric2F1[-1/4, 1, 3/4, -Tan[a + b*x]^2])/(b*d*Sqrt[d*Tan[a + b
*x]])
```

fricas [B] time = 0.53, size = 652, normalized size = 3.08

$$\frac{8\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\cos\left(bx+a\right)\sin\left(bx+a\right)+4\left(\sqrt{2}\,bd^{2}\cos\left(bx+a\right)^{2}-\sqrt{2}\,bd^{2}\right)\left(\frac{1}{b^{4}d^{6}}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,bd\sqrt{\frac{d\sin(bx+a)}{\cos(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] 1/4*(8*sqrt(d*sin(b*x + a)/cos(b*x + a))*cos(b*x + a)*sin(b*x + a) + 4*(sqr
t(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(b^4*d^6))^(1/4)*arctan(-sqrt
(2)*b*d*sqrt(d*sin(b*x + a)/cos(b*x + a))*(1/(b^4*d^6))^(1/4) + sqrt(2)*b*d
*sqrt((sqrt(2)*b^3*d^5*sqrt(d*sin(b*x + a)/cos(b*x + a))*(1/(b^4*d^6))^(3/4
)*cos(b*x + a) + b^2*d^4*sqrt(1/(b^4*d^6))*cos(b*x + a) + d*sin(b*x + a))/c
os(b*x + a))*(1/(b^4*d^6))^(1/4) - 1) + 4*(sqrt(2)*b*d^2*cos(b*x + a)^2 - s
qrt(2)*b*d^2)*(1/(b^4*d^6))^(1/4)*arctan(-sqrt(2)*b*d*sqrt(d*sin(b*x + a)/c
os(b*x + a))*(1/(b^4*d^6))^(1/4) + sqrt(2)*b*d*sqrt(-(sqrt(2)*b^3*d^5*sqrt(
d*sin(b*x + a)/cos(b*x + a))*(1/(b^4*d^6))^(3/4)*cos(b*x + a) - b^2*d^4*sqr
t(1/(b^4*d^6))*cos(b*x + a) - d*sin(b*x + a))/cos(b*x + a))*(1/(b^4*d^6))^(
1/4) + 1) + (sqrt(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(b^4*d^6))^(1
/4)*log((sqrt(2)*b^3*d^5*sqrt(d*sin(b*x + a)/cos(b*x + a))*(1/(b^4*d^6))^(3
/4)*cos(b*x + a) + b^2*d^4*sqrt(1/(b^4*d^6))*cos(b*x + a) + d*sin(b*x + a))
/cos(b*x + a)) - (sqrt(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(b^4*d^6
))^(1/4)*log(-(sqrt(2)*b^3*d^5*sqrt(d*sin(b*x + a)/cos(b*x + a))*(1/(b^4*d^
6))^(3/4)*cos(b*x + a) - b^2*d^4*sqrt(1/(b^4*d^6))*cos(b*x + a) - d*sin(b*x
 + a))/cos(b*x + a)))/(b*d^2*cos(b*x + a)^2 - b*d^2)
```

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

$$\int \frac{1}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^(-3/2), x)
```

maple [A] time = 0.09, size = 184, normalized size = 0.87

$$-\frac{\sqrt{2}\ \ln\left(\frac{d\tan(bx+a)-\left(d^2\right)^{\frac{1}{4}}\sqrt{d\tan(bx+a)}\ \sqrt{2}+\sqrt{d^2}}{d\tan(bx+a)+\left(d^2\right)^{\frac{1}{4}}\sqrt{d\tan(bx+a)}\ \sqrt{2}+\sqrt{d^2}}\right)}{4bd\left(d^2\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\ \arctan\left(\frac{\sqrt{2}\ \sqrt{d\tan(bx+a)}}{\left(d^2\right)^{\frac{1}{4}}}+1\right)}{2bd\left(d^2\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\ \arctan\left(-\frac{\sqrt{2}\ \sqrt{d\tan(bx+a)}}{\left(d^2\right)^{\frac{1}{4}}}+1\right)}{2bd\left(d^2\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/4/b/d/(d^2)^(1/4)*2^(1/2)*ln((d*tan(b*x+a)-(d^2)^(1/4)*(d*tan(b*x+a))^(1
/2)*2^(1/2)+(d^2)^(1/2))/(d*tan(b*x+a)+(d^2)^(1/4)*(d*tan(b*x+a))^(1/2)*2^(
1/2)+(d^2)^(1/2)))-1/2/b/d/(d^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(d^2)^(1/4)*(
d*tan(b*x+a))^(1/2)+1)+1/2/b/d/(d^2)^(1/4)*2^(1/2)*arctan(-2^(1/2)/(d^2)^(1
/4)*(d*tan(b*x+a))^(1/2)+1)-2/b/d/(d*tan(b*x+a))^(1/2)
```

maxima [A] time = 0.52, size = 167, normalized size = 0.79

$$-\frac{\frac{2\sqrt{2}\ \arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\ \sqrt{d}+2\ \sqrt{d\tan(bx+a)}\right)}{2\ \sqrt{d}}\right)}{\sqrt{d}}+\frac{2\sqrt{2}\ \arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\ \sqrt{d}-2\ \sqrt{d\tan(bx+a)}\right)}{2\ \sqrt{d}}\right)}{\sqrt{d}}-\frac{\sqrt{2}\ \log\left(d\tan(bx+a)+\sqrt{2}\ \sqrt{d\tan(bx+a)}\ \sqrt{d}+d\right)}{\sqrt{d}}+\frac{\sqrt{2}\ \mathrm{lo}}{}}{4\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(2*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(b*x + a)
))/sqrt(d))/sqrt(d) + 2*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2*sq
rt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - sqrt(2)*log(d*tan(b*x + a) + sqrt(2)
*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + sqrt(2)*log(d*tan(b*x + a) - s
qrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + 8/sqrt(d*tan(b*x + a)))/
(b*d)
```

mupad [B] time = 2.69, size = 76, normalized size = 0.36

$$\frac{(-1)^{1/4}\,\mathrm{atanh}\left(\frac{(-1)^{1/4}\,\sqrt{d\tan(a+b\,x)}}{\sqrt{d}}\right)}{b\,d^{3/2}}-\frac{(-1)^{1/4}\,\mathrm{atan}\left(\frac{(-1)^{1/4}\,\sqrt{d\tan(a+b\,x)}}{\sqrt{d}}\right)}{b\,d^{3/2}}-\frac{2}{b\,d\,\sqrt{d\tan\left(a+b\,x\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*tan(a + b*x))^(3/2),x)
```

```
[Out] ((-1)^(1/4)*atanh(((-1)^(1/4)*(d*tan(a + b*x))^(1/2))/d^(1/2)))/(b*d^(3/2))
 - ((-1)^(1/4)*atan(((-1)^(1/4)*(d*tan(a + b*x))^(1/2))/d^(1/2)))/(b*d^(3/2
)) - 2/(b*d*(d*tan(a + b*x))^(1/2))
```

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

$$\int \frac{1}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral((d*tan(a + b*x))**(-3/2), x)
```

3.262 $\int \frac{\cos^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=249

$$\frac{5\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}bd^{3/2}}-\frac{5\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}bd^{3/2}}-\frac{5\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}bd^{3/2}}+$$

```
[Out] 5/8*arctan(1-2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)-5/8*ar
ctan(1+2^(1/2)*(d*tan(b*x+a))^(1/2)/d^(1/2))/b/d^(3/2)*2^(1/2)-5/16*ln(d^(1
/2)-2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)*2^(1/2)+5/16
*ln(d^(1/2)+2^(1/2)*(d*tan(b*x+a))^(1/2)+d^(1/2)*tan(b*x+a))/b/d^(3/2)*2^(1
/2)-5/2/b/d/(d*tan(b*x+a))^(1/2)+1/2*cos(b*x+a)^2/b/d/(d*tan(b*x+a))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {2607, 290, 325, 329, 297, 1162, 617, 204, 1165, 628}

$$\frac{5\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}bd^{3/2}}-\frac{5\tan^{-1}\left(\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}+1\right)}{4\sqrt{2}bd^{3/2}}-\frac{5\log\left(\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}+\sqrt{d}\right)}{8\sqrt{2}bd^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (5*ArcTan[1 - (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*b*d^(3/2)
) - (5*ArcTan[1 + (Sqrt[2]*Sqrt[d*Tan[a + b*x]])/Sqrt[d]])/(4*Sqrt[2]*b*d^(
3/2)) - (5*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] - Sqrt[2]*Sqrt[d*Tan[a + b*x]
]])/(8*Sqrt[2]*b*d^(3/2)) + (5*Log[Sqrt[d] + Sqrt[d]*Tan[a + b*x] + Sqrt[2]
*Sqrt[d*Tan[a + b*x]]])/(8*Sqrt[2]*b*d^(3/2)) - 5/(2*b*d*Sqrt[d*Tan[a + b*x
]]) + Cos[a + b*x]^2/(2*b*d*Sqrt[d*Tan[a + b*x]])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
```

]

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \frac{\cos^2(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = \frac{\text{Subst}\left(\int \frac{1}{(dx)^{3/2}\left(1+x^2\right)^2}\,dx, x, \tan(a+bx)\right)}{b}$$

$$= \frac{\cos^2(a+bx)}{2bd\sqrt{d\tan(a+bx)}} + \frac{5\,\text{Subst}\left(\int \frac{1}{(dx)^{3/2}\left(1+x^2\right)}\,dx, x, \tan(a+bx)\right)}{4b}$$

$$= -\frac{5}{2bd\sqrt{d\tan(a+bx)}} + \frac{\cos^2(a+bx)}{2bd\sqrt{d\tan(a+bx)}} - \frac{5\,\text{Subst}\left(\int \frac{\sqrt{dx}}{1+x^2}\,dx, x, \tan(a+bx)\right)}{4bd^2}$$

$$= -\frac{5}{2bd\sqrt{d\tan(a+bx)}} + \frac{\cos^2(a+bx)}{2bd\sqrt{d\tan(a+bx)}} - \frac{5\,\text{Subst}\left(\int \frac{x^2}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(a+bx)}\right.}{2bd^3}$$

$$= -\frac{5}{2bd\sqrt{d\tan(a+bx)}} + \frac{\cos^2(a+bx)}{2bd\sqrt{d\tan(a+bx)}} + \frac{5\,\text{Subst}\left(\int \frac{d-x^2}{1+\frac{x^4}{d^2}}\,dx, x, \sqrt{d\tan(a+bx)}\right.}{4bd^3}$$

$$= -\frac{5}{2bd\sqrt{d\tan(a+bx)}} + \frac{\cos^2(a+bx)}{2bd\sqrt{d\tan(a+bx)}} - \frac{5\,\text{Subst}\left(\int \frac{\sqrt{2}\sqrt{d}+2x}{-d-\sqrt{2}\sqrt{d}x-x^2}\,dx, x, \sqrt{d\tan(\right.}{8\sqrt{2}\,bd^{3/2}}$$

$$= -\frac{5\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)-\sqrt{2}\sqrt{d\tan(a+bx)}\right)}{8\sqrt{2}\,bd^{3/2}} + \frac{5\log\left(\sqrt{d}+\sqrt{d}\tan(a+bx)\right.}{8\sqrt{2}\,bd^{3}}$$

$$= \frac{5\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,bd^{3/2}} - \frac{5\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt{d\tan(a+bx)}}{\sqrt{d}}\right)}{4\sqrt{2}\,bd^{3/2}} - \frac{5\log\left(\sqrt{d}+\sqrt{d}\tan(a\right.}{8\sqrt{}}$$

Mathematica [A] time = 0.29, size = 115, normalized size = 0.46

$$\frac{\csc(a+bx)\sqrt{d\tan(a+bx)}\left(-17\cos(a+bx)+\cos(3(a+bx))+5\sqrt{\sin(2(a+bx))}\sin^{-1}(\cos(a+bx)-\sin(a+b\right.}{8bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]^2/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (Csc[a + b*x]*(-17*Cos[a + b*x] + Cos[3*(a + b*x)] + 5*ArcSin[Cos[a + b*x]
- Sin[a + b*x]]*Sqrt[Sin[2*(a + b*x)]] + 5*Log[Cos[a + b*x] + Sin[a + b*x]
+ Sqrt[Sin[2*(a + b*x)]]]*Sqrt[Sin[2*(a + b*x)]])*Sqrt[d*Tan[a + b*x]])/(8*
b*d^2)
```

fricas [B] time = 109.45, size = 2037, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] -1/64*(32*(cos(b*x + a)^3 - 5*cos(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a
))*sin(b*x + a) - 20*(sqrt(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(b^4
*d^6))^(1/4)*arctan((sqrt(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x
+ a) - 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + s
qrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x
+ a)) + 1)*(b^2*d^3*sqrt(1/(b^4*d^6)) + 2*cos(b*x + a)*sin(b*x + a) + (sqrt
(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d*(1/(b^4*d^6))^
(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) - (sqrt
(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/
(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*cos(
b*x + a)^2 - 1)) - 20*(sqrt(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(b^
4*d^6))^(1/4)*arctan(-(sqrt(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*
x + a) + 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) +
 sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*
x + a)) + 1)*(b^2*d^3*sqrt(1/(b^4*d^6)) + 2*cos(b*x + a)*sin(b*x + a) - (sq
rt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)^2 + sqrt(2)*b*d*(1/(b^4*d^6)
)^(1/4)*cos(b*x + a)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))) + (sq
rt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(
1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)))/(2*co
s(b*x + a)^2 - 1)) + 20*(sqrt(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(
b^4*d^6))^(1/4)*arctan(1/2*((sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x +
a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(4*b^2*d^3*sqrt(1/(b
^4*d^6))*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)
*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2
)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x + a)/cos(b*x + a))
- (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d
^6))^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 4*(b^2*d^3*cos
(b*x + a)^3 - b^2*d^3*cos(b*x + a))*sqrt(1/(b^4*d^6)) - 2*sin(b*x + a))/((2
*cos(b*x + a)^2 - 1)*sin(b*x + a))) + 20*(sqrt(2)*b*d^2*cos(b*x + a)^2 - sq
rt(2)*b*d^2)*(1/(b^4*d^6))^(1/4)*arctan(1/2*((sqrt(2)*b^3*d^4*(1/(b^4*d^6))
^(3/4)*cos(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(4*
b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^4*(1
/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/
4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) + 1)*sqrt(d*sin(b*x +
a)/cos(b*x + a)) - (sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a) + sqrt
(2)*b*d*(1/(b^4*d^6))^(1/4)*sin(b*x + a))*sqrt(d*sin(b*x + a)/cos(b*x + a))
 - 4*(b^2*d^3*cos(b*x + a)^3 - b^2*d^3*cos(b*x + a))*sqrt(1/(b^4*d^6)) + 2*
```

```
sin(b*x + a))/((2*cos(b*x + a)^2 - 1)*sin(b*x + a))) - 5*(sqrt(2)*b*d^2*cos
(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(b^4*d^6))^(1/4)*log(4*b^2*d^3*sqrt(1/(b^4*
d^6))*cos(b*x + a)*sin(b*x + a) + 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*co
s(b*x + a)*sin(b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*s
qrt(d*sin(b*x + a)/cos(b*x + a)) + 1) + 5*(sqrt(2)*b*d^2*cos(b*x + a)^2 - s
qrt(2)*b*d^2)*(1/(b^4*d^6))^(1/4)*log(4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x +
 a)*sin(b*x + a) - 2*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(
b*x + a) + sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x +
 a)/cos(b*x + a)) + 1) - 5*(sqrt(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(
1/(b^4*d^6))^(1/4)*log(1/4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x +
 a) + 1/8*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) +
sqrt(2)*b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x
 + a)) + 1/16) + 5*(sqrt(2)*b*d^2*cos(b*x + a)^2 - sqrt(2)*b*d^2)*(1/(b^4*d
^6))^(1/4)*log(1/4*b^2*d^3*sqrt(1/(b^4*d^6))*cos(b*x + a)*sin(b*x + a) - 1/
8*(sqrt(2)*b^3*d^4*(1/(b^4*d^6))^(3/4)*cos(b*x + a)*sin(b*x + a) + sqrt(2)*
b*d*(1/(b^4*d^6))^(1/4)*cos(b*x + a)^2)*sqrt(d*sin(b*x + a)/cos(b*x + a)) +
 1/16))/(b*d^2*cos(b*x + a)^2 - b*d^2)
```

giac [A] time = 0.93, size = 252, normalized size = 1.01

$$-\frac{\frac{10\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{bd^2}+\frac{10\sqrt{2}|d|^{\frac{3}{2}}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{|d|}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{|d|}}\right)}{bd^2}-\frac{5\sqrt{2}|d|^{\frac{3}{2}}\log\left(d\tan(bx+a)+\sqrt{2}\sqrt{d\tan(bx+}\right.}{bd^2}}{16d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] -1/16*(10*sqrt(2)*abs(d)^(3/2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) + 2
*sqrt(d*tan(b*x + a)))/sqrt(abs(d)))/(b*d^2) + 10*sqrt(2)*abs(d)^(3/2)*arct
an(-1/2*sqrt(2)*(sqrt(2)*sqrt(abs(d)) - 2*sqrt(d*tan(b*x + a)))/sqrt(abs(d)
))/(b*d^2) - 5*sqrt(2)*abs(d)^(3/2)*log(d*tan(b*x + a) + sqrt(2)*sqrt(d*tan
(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d^2) + 5*sqrt(2)*abs(d)^(3/2)*log(d*ta
n(b*x + a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(abs(d)) + abs(d))/(b*d^2) +
8*(5*d^2*tan(b*x + a)^2 + 4*d^2)/((sqrt(d*tan(b*x + a))*d^2*tan(b*x + a)^2
+ sqrt(d*tan(b*x + a))*d^2)*b))/d
```

maple [C] time = 0.51, size = 982, normalized size = 3.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^2/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/8/b*(5*I*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi(
(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(b
*x+a)-5*I*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+si
n(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi((
-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(b*
x+a)+5*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b
*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi((-(-
sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))*cos(b*x+a
)+5*I*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*
x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi((-(-s
in(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))+5*(-(-sin(
b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi((-(-sin(b*x+a)-1+co
s(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))*cos(b*x+a)-5*I*(-(-sin(b
*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi((-(-sin(b*x+a)-1+cos
(b*x+a))/sin(b*x+a))^(1/2),1/2-1/2*I,1/2*2^(1/2))+5*(-(-sin(b*x+a)-1+cos(b*
x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+
cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticPi((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b
*x+a))^(1/2),1/2+1/2*I,1/2*2^(1/2))+5*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+
a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/si
n(b*x+a))^(1/2)*EllipticPi((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1
/2-1/2*I,1/2*2^(1/2))+2*cos(b*x+a)^3*2^(1/2)-10*cos(b*x+a)*2^(1/2))*sin(b*x
+a)/cos(b*x+a)^2/(d*sin(b*x+a)/cos(b*x+a))^(3/2)*2^(1/2)
```

maxima [A] time = 0.73, size = 204, normalized size = 0.82

$$-\frac{\frac{10\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}+2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}+\frac{10\sqrt{2}\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\sqrt{d}-2\sqrt{d\tan(bx+a)}\right)}{2\sqrt{d}}\right)}{\sqrt{d}}-\frac{5\sqrt{2}\log\left(d\tan(bx+a)+\sqrt{2}\sqrt{d\tan(bx+a)}\sqrt{d}+d\right)}{\sqrt{d}}+5}{16\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] -1/16*(10*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2)*sqrt(d) + 2*sqrt(d*tan(b*x +
a)))/sqrt(d))/sqrt(d) + 10*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)*sqrt(d) - 2
*sqrt(d*tan(b*x + a)))/sqrt(d))/sqrt(d) - 5*sqrt(2)*log(d*tan(b*x + a) + sq
rt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + 5*sqrt(2)*log(d*tan(b*x +
 a) - sqrt(2)*sqrt(d*tan(b*x + a))*sqrt(d) + d)/sqrt(d) + 8*(5*d^2*tan(b*x
+ a)^2 + 4*d^2)/((d*tan(b*x + a))^(5/2) + sqrt(d*tan(b*x + a))*d^2))/(b*d)
```

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

$$\int \frac{\cos{(a+b\,x)}^2}{{\left(d\tan{(a+b\,x)}\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^2/(d*tan(a + b*x))^(3/2),x)
[Out] int(cos(a + b*x)^2/(d*tan(a + b*x))^(3/2), x)
```

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

$$\int \frac{\cos^{2}{\left(a + bx \right)}}{\left(d \tan{\left(a + bx \right)}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**2/(d*tan(b*x+a))**(3/2),x)
[Out] Integral(cos(a + b*x)**2/(d*tan(a + b*x))**(3/2), x)
```

3.263 $\int \frac{\sec^5(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=138

$$\frac{24\cos(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}+\frac{12\sec(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}-\frac{24\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+b}}{5bd^2\sqrt{\sin(2a+2bx)}}$$

```
[Out] -2*sec(b*x+a)^3/b/d/(d*tan(b*x+a))^(1/2)+24/5*cos(b*x+a)*(sin(a+1/4*Pi+b*x)
^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*(d*tan(b*x
+a))^(1/2)/b/d^2/sin(2*b*x+2*a)^(1/2)+24/5*cos(b*x+a)*(d*tan(b*x+a))^(3/2)/
b/d^3+12/5*sec(b*x+a)*(d*tan(b*x+a))^(3/2)/b/d^3
```

Rubi [A] time = 0.17, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2608, 2613, 2615, 2572, 2639}

$$\frac{24\cos(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}+\frac{12\sec(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}-\frac{24\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+b}}{5bd^2\sqrt{\sin(2a+2bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^5/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Sec[a + b*x]^3)/(b*d*Sqrt[d*Tan[a + b*x]]) - (24*Cos[a + b*x]*EllipticE
[a - Pi/4 + b*x, 2]*Sqrt[d*Tan[a + b*x]])/(5*b*d^2*Sqrt[Sin[2*a + 2*b*x]])
+ (24*Cos[a + b*x]*(d*Tan[a + b*x])^(3/2))/(5*b*d^3) + (12*Sec[a + b*x]*(d*
Tan[a + b*x])^(3/2))/(5*b*d^3)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sec^5(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= -\frac{2\sec^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{6\int \sec^3(a+bx)\sqrt{d\tan(a+bx)}\,dx}{d^2}\\ &= -\frac{2\sec^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{12\sec(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}+\frac{12\int \sec(a+bx)\sqrt{d\tan(a+bx)}\,dx}{5d^2}\\ &= -\frac{2\sec^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{24\cos(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}+\frac{12\sec(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}\\ &= -\frac{2\sec^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{24\cos(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}+\frac{12\sec(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}\\ &= -\frac{2\sec^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{24\cos(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}+\frac{12\sec(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}\\ &= -\frac{2\sec^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}-\frac{24\cos(a+bx)E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{d\tan(a+bx)}}{5bd^2\sqrt{\sin(2a+2bx)}}+\frac{24\cos(a+}{}\end{aligned}$$

Mathematica [C] time = 0.90, size = 104, normalized size = 0.75

$$\frac{2\csc(a+bx)\sqrt{d\tan(a+bx)}\left(\sqrt{\sec^2(a+bx)}\left(12\sin^2(a+bx)+\tan^2(a+bx)-5\right)-8\tan^2(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};\right.\right.}{5bd^2\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^5/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (2*Csc[a + b*x]*Sqrt[d*Tan[a + b*x]]*(-8*Hypergeometric2F1[3/4, 3/2, 7/4, -
Tan[a + b*x]^2]*Tan[a + b*x]^2 + Sqrt[Sec[a + b*x]^2]*(-5 + 12*Sin[a + b*x]
^2 + Tan[a + b*x]^2)))/(5*b*d^2*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(bx+a\right)}\,\sec\left(bx+a\right)^{5}}{d^{2}\tan\left(bx+a\right)^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*sec(b*x + a)^5/(d^2*tan(b*x + a)^2), x)
```

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

$$\int \frac{\sec\left(bx+a\right)^{5}}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sec(b*x + a)^5/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.66, size = 537, normalized size = 3.89

$$-\frac{\left(-24\left(\cos^{3}\left(bx+a\right)\right)\text{EllipticE}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^5/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] -1/5/b*(-24*cos(b*x+a)^3*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))
^(1/2),1/2*2^(1/2))*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)+12
*cos(b*x+a)^3*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a
)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*Elliptic
```

```
F((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-24*cos(b*x+a)
^2*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*(-
(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/si
n(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)+12*cos(b*x+a)^2*(-(-sin(
b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF((-(-sin(b*x+a)-1+cos
(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+12*cos(b*x+a)^3*2^(1/2)-6*cos(b*x+a
)^2*2^(1/2)-2^(1/2))*sin(b*x+a)/cos(b*x+a)^4/(d*sin(b*x+a)/cos(b*x+a))^(3/2
)*2^(1/2)
```

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

$$\int \frac{\sec(bx+a)^5}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sec(b*x + a)^5/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{1}{\cos(a+b\,x)^5\,(d\tan(a+b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)^5*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] int(1/(cos(a + b*x)^5*(d*tan(a + b*x))^(3/2)), x)
```

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

$$\int \frac{\sec^5(a+bx)}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**5/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(sec(a + b*x)**5/(d*tan(a + b*x))**(3/2), x)
```

3.264 $\int \frac{\sec^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=104

$$\frac{4\cos(a+bx)(d\tan(a+bx))^{3/2}}{bd^3}-\frac{4\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\sec(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*sec(b*x+a)/b/d/(d*tan(b*x+a))^(1/2)+4*cos(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(
1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*(d*tan(b*x+a))^
(1/2)/b/d^2/sin(2*b*x+2*a)^(1/2)+4*cos(b*x+a)*(d*tan(b*x+a))^(3/2)/b/d^3
```

Rubi [A] time = 0.13, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2608, 2613, 2615, 2572, 2639}

$$\frac{4\cos(a+bx)(d\tan(a+bx))^{3/2}}{bd^3}-\frac{4\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\sec(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Sec[a + b*x])/(b*d*Sqrt[d*Tan[a + b*x]]) - (4*Cos[a + b*x]*EllipticE[a
 - Pi/4 + b*x, 2]*Sqrt[d*Tan[a + b*x]])/(b*d^2*Sqrt[Sin[2*a + 2*b*x]]) + (4*
Cos[a + b*x]*(d*Tan[a + b*x])^(3/2))/(b*d^3)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
```

```
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sec^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= -\frac{2\sec(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{2\int \sec(a+bx)\sqrt{d\tan(a+bx)}\,dx}{d^2}\\ &= -\frac{2\sec(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{4\cos(a+bx)(d\tan(a+bx))^{3/2}}{bd^3}-\frac{4\int \cos(a+bx)\sqrt{d\tan(a+b}{d^2}\\ &= -\frac{2\sec(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{4\cos(a+bx)(d\tan(a+bx))^{3/2}}{bd^3}-\frac{\left(4\sqrt{\cos(a+bx)}\,\sqrt{d\tan(a+}{d^2}\\ &= -\frac{2\sec(a+bx)}{bd\sqrt{d\tan(a+bx)}}+\frac{4\cos(a+bx)(d\tan(a+bx))^{3/2}}{bd^3}-\frac{\left(4\cos(a+bx)\sqrt{d\tan(a+bx}{d^2\sqrt{\sin(2a}\\ &= -\frac{2\sec(a+bx)}{bd\sqrt{d\tan(a+bx)}}-\frac{4\cos(a+bx)E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}+\frac{4\cos(a+bx}{}\end{aligned}$$

Mathematica [C] time = 0.48, size = 93, normalized size = 0.89

$$-\frac{2\csc(a+bx)\sqrt{d\tan(a+bx)}\left(4\tan^2(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+3\cos(2(a+bx))\sqrt{\sec^2(a+bx)}\right)}{3bd^2\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

[Out] (-2*Csc[a + b*x]*Sqrt[d*Tan[a + b*x]]*(3*Cos[2*(a + b*x)]*Sqrt[Sec[a + b*x]
^2] + 4*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Tan[a + b*x]^2))/
(3*b*d^2*Sqrt[Sec[a + b*x]^2])

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(bx+a\right)}\sec\left(bx+a\right)^{3}}{d^{2}\tan\left(bx+a\right)^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")

[Out] integral(sqrt(d*tan(b*x + a))*sec(b*x + a)^3/(d^2*tan(b*x + a)^2), x)

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

$$\int\frac{\sec\left(bx+a\right)^{3}}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="giac")

[Out] integrate(sec(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)

maple [B] time = 0.64, size = 499, normalized size = 4.80

$$\frac{\left(4\,\text{EllipticE}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos\left(bx+a\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sec(b*x+a)^3/(d*tan(b*x+a))^(3/2),x)

[Out] 1/b*(4*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2)
)*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))
/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)-2*Ellipti
cF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)*(
(-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)+4*EllipticE((-(-sin(b*x
+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a
))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos
(b*x+a))/sin(b*x+a))^(1/2)-2*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x

```
+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+
sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2
)-2*cos(b*x+a)*2^(1/2)+2^(1/2))*sin(b*x+a)/cos(b*x+a)^2/(d*sin(b*x+a)/cos(b
*x+a))^(3/2)*2^(1/2)
```

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

$$\int \frac{\sec(bx+a)^3}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sec(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{1}{\cos(a+b\,x)^3\,(d\tan(a+b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)^3*(d*tan(a + b*x))^(3/2)),x)
```

```
[Out] int(1/(cos(a + b*x)^3*(d*tan(a + b*x))^(3/2)), x)
```

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

$$\int \frac{\sec^3(a+bx)}{(d\tan(a+bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**3/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Integral(sec(a + b*x)**3/(d*tan(a + b*x))**(3/2), x)
```

3.265 $\int \frac{\sec(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=78

$$-\frac{2\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*cos(b*x+a)/b/d/(d*tan(b*x+a))^(1/2)+2*cos(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(
1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*(d*tan(b*x+a))^
(1/2)/b/d^2/sin(2*b*x+2*a)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2608, 2615, 2572, 2639}

$$-\frac{2\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Cos[a + b*x])/(b*d*Sqrt[d*Tan[a + b*x]]) - (2*Cos[a + b*x]*EllipticE[a
- Pi/4 + b*x, 2]*Sqrt[d*Tan[a + b*x]])/(b*d^2*Sqrt[Sin[2*a + 2*b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
```

```
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sec(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{2\int \cos(a+bx)\sqrt{d\tan(a+bx)}\,dx}{d^2} \\
&= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{\left(2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int \sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}{d^2\sqrt{\sin(a+bx)}} \\
&= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{\left(2\cos(a+bx)\sqrt{d\tan(a+bx)}\right)\int \sqrt{\sin(2a+2bx)}\,dx}{d^2\sqrt{\sin(2a+2bx)}} \\
&= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{2\cos(a+bx)E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}
\end{aligned}$$

Mathematica [C] time = 0.40, size = 69, normalized size = 0.88

$$-\frac{2\sin(a+bx)\left(2\tan^2(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+3\right)}{3b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Sin[a + b*x]*(3 + 2*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*S
qrt[Sec[a + b*x]^2]*Tan[a + b*x]^2))/(3*b*(d*Tan[a + b*x])^(3/2))
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\tan(bx+a)}\,\sec(bx+a)}{d^2\tan(bx+a)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*sec(b*x + a)/(d^2*tan(b*x + a)^2), x)
```

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

$$\int \frac{\sec(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sec(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.45, size = 496, normalized size = 6.36

$$\left(2\,\mathrm{EllipticE}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\,\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\,\sqrt{-\frac{-\sin(bx+a)-1+\cos}{\sin(bx+a)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/b*(2*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2)
)*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))
/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)-EllipticF
((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)*((-
1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/
2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)+2*EllipticE((-(-sin(b*x+a
)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))
^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b
*x+a))/sin(b*x+a))^(1/2)-EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))
^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(
b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)-co
s(b*x+a)*2^(1/2))*sin(b*x+a)/cos(b*x+a)^2/(d*sin(b*x+a)/cos(b*x+a))^(3/2)*2
^(1/2)
```

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

$$\int \frac{\sec(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sec(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{1}{\cos (a + b\,x)\ (d\tan (a + b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)*(d*tan(a + b*x))^(3/2)),x)
[Out] int(1/(cos(a + b*x)*(d*tan(a + b*x))^(3/2)), x)
```

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

$$\int \frac{\sec (a + bx)}{(d\tan (a + bx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)/(d*tan(b*x+a))**(3/2),x)
[Out] Integral(sec(a + b*x)/(d*tan(a + b*x))**(3/2), x)
```

3.266 $\int \frac{\cos(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=78

$$-\frac{3\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*cos(b*x+a)/b/d/(d*tan(b*x+a))^(1/2)+3*cos(b*x+a)*(sin(a+1/4*Pi+b*x)^2)^(
1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*(d*tan(b*x+a))^
(1/2)/b/d^2/sin(2*b*x+2*a)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2609, 2615, 2572, 2639}

$$-\frac{3\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Cos[a + b*x])/(b*d*Sqrt[d*Tan[a + b*x]]) - (3*Cos[a + b*x]*EllipticE[a
 - Pi/4 + b*x, 2]*Sqrt[d*Tan[a + b*x]])/(b*d^2*Sqrt[Sin[2*a + 2*b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\cos(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}-\frac{3\int\cos(a+bx)\sqrt{d\tan(a+bx)}\,dx}{d^2}\\ &= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}-\frac{\left(3\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}\right)\int\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}{d^2\sqrt{\sin(a+bx)}}\\ &= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}-\frac{\left(3\cos(a+bx)\sqrt{d\tan(a+bx)}\right)\int\sqrt{\sin(2a+2bx)}\,dx}{d^2\sqrt{\sin(2a+2bx)}}\\ &= -\frac{2\cos(a+bx)}{bd\sqrt{d\tan(a+bx)}}-\frac{3\cos(a+bx)E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{d\tan(a+bx)}}{bd^2\sqrt{\sin(2a+2bx)}}\end{aligned}$$

Mathematica [C] time = 0.41, size = 66, normalized size = 0.85

$$-\frac{2\sin(a+bx)\left(\tan^2(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+1\right)}{b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Sin[a + b*x]*(1 + Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sqr
t[Sec[a + b*x]^2]*Tan[a + b*x]^2))/(b*(d*Tan[a + b*x])^(3/2))
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\tan(bx+a)}\cos(bx+a)}{d^2\tan(bx+a)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*cos(b*x + a)/(d^2*tan(b*x + a)^2), x)
```

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

$$\int \frac{\cos(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(cos(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.51, size = 509, normalized size = 6.53

$$\frac{\left(6\,\mathrm{EllipticE}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos(bx+a)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/2/b*(6*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/
2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a
))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)-3*Ellip
ticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)
*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))
^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)+6*EllipticE((-(-sin(b
*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x
+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+c
os(b*x+a))/sin(b*x+a))^(1/2)-3*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b
*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a
)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1
/2)+cos(b*x+a)^2*2^(1/2)-3*cos(b*x+a)*2^(1/2))*sin(b*x+a)/cos(b*x+a)^2/(d*s
in(b*x+a)/cos(b*x+a))^(3/2)*2^(1/2)
```

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

$$\int \frac{\cos(bx+a)}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(cos(b*x + a)/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{\cos(a+b\,x)}{\left(d\tan(a+b\,x)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)/(d*tan(a + b*x))^(3/2),x)
[Out] int(cos(a + b*x)/(d*tan(a + b*x))^(3/2), x)
```

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

$$\int \frac{\cos(a+bx)}{\left(d\tan(a+bx)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)/(d*tan(b*x+a))**(3/2),x)
[Out] Integral(cos(a + b*x)/(d*tan(a + b*x))**(3/2), x)
```

3.267 $\int \frac{\cos^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=112

$$-\frac{7\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{3bd^3}-\frac{7\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{2bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\cos^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

```
[Out] -2*cos(b*x+a)^3/b/d/(d*tan(b*x+a))^(1/2)+7/2*cos(b*x+a)*(sin(a+1/4*Pi+b*x)^
2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*(d*tan(b*x+
a))^(1/2)/b/d^2/sin(2*b*x+2*a)^(1/2)-7/3*cos(b*x+a)^3*(d*tan(b*x+a))^(3/2)/
b/d^3
```

Rubi [A] time = 0.15, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2609, 2612, 2615, 2572, 2639}

$$-\frac{7\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{3bd^3}-\frac{7\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{2bd^2\sqrt{\sin(2a+2bx)}}-\frac{2\cos^3(a+bx)}{bd\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Cos[a + b*x]^3)/(b*d*Sqrt[d*Tan[a + b*x]]) - (7*Cos[a + b*x]*EllipticE[
a - Pi/4 + b*x, 2]*Sqrt[d*Tan[a + b*x]])/(2*b*d^2*Sqrt[Sin[2*a + 2*b*x]]) -
 (7*Cos[a + b*x]^3*(d*Tan[a + b*x])^(3/2))/(3*b*d^3)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
```

```
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cos^3(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx = -\frac{2\cos^3(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{7\int \cos^3(a+bx)\sqrt{d\tan(a+bx)}\,dx}{d^2}$$

$$= -\frac{2\cos^3(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{7\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{3bd^3} - \frac{7\int \cos(a+bx)\sqrt{d\tan(a+}}{2d^2}$$

$$= -\frac{2\cos^3(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{7\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{3bd^3} - \frac{\left(7\sqrt{\cos(a+bx)}\sqrt{d\tan(a+}\right.}{2d^2}$$

$$= -\frac{2\cos^3(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{7\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{3bd^3} - \frac{\left(7\cos(a+bx)\sqrt{d\tan(a+b}\right.}{2d^2\sqrt{\sin(2}}$$

$$= -\frac{2\cos^3(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{7\cos(a+bx)E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{d\tan(a+bx)}}{2bd^2\sqrt{\sin(2a+2bx)}} - \frac{7\cos^3(a+b}{}$$

Mathematica [C] time = 0.57, size = 77, normalized size = 0.69

$$\frac{\sin(a+bx)\left(-14\tan^2(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+\cos(2(a+bx))-13\right)}{6b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]^3/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (Sin[a + b*x]*(-13 + Cos[2*(a + b*x)] - 14*Hypergeometric2F1[3/4, 3/2, 7/4,
 -Tan[a + b*x]^2]*Sqrt[Sec[a + b*x]^2]*Tan[a + b*x]^2))/(6*b*(d*Tan[a + b*x
])^(3/2))
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\tan\left(bx+a\right)}\cos\left(bx+a\right)^{3}}{d^{2}\tan\left(bx+a\right)^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*cos(b*x + a)^3/(d^2*tan(b*x + a)^2), x)
```

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

$$\int \frac{\cos\left(bx+a\right)^{3}}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(cos(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.52, size = 523, normalized size = 4.67

$$\frac{\left(2\left(\cos^{4}\left(bx+a\right)\right)\sqrt{2}\;+42\,\mathrm{EllipticE}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos\left(bx+a\right)\sqrt{\frac{-1+\cos(bx+a)}{\sin(bx+a)}}\;\sqrt{\frac{-1+\cos(bx+a)+\sin(bx+a)}{\sin(bx+a)}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^3/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/12/b*(2*cos(b*x+a)^4*2^(1/2)+42*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/si
n(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*
((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/
sin(b*x+a))^(1/2)-21*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/
2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+
a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(
1/2)+42*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2
))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a
))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)-21*EllipticF((-(-si
```

```
n(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(
b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-
1+cos(b*x+a))/sin(b*x+a))^(1/2)+7*cos(b*x+a)^2*2^(1/2)-21*cos(b*x+a)*2^(1/2
))*sin(b*x+a)/cos(b*x+a)^2/(d*sin(b*x+a)/cos(b*x+a))^(3/2)*2^(1/2)
```

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

$$\int \frac{\cos(bx+a)^3}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(cos(b*x + a)^3/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{\cos(a+b\,x)^3}{(d\tan(a+b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^3/(d*tan(a + b*x))^(3/2),x)
```

```
[Out] int(cos(a + b*x)^3/(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**3/(d*tan(b*x+a))**(3/2),x)
```

```
[Out] Timed out
```

3.268 $\int \frac{\cos^5(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=142

$$-\frac{11\cos^5(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}-\frac{77\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{30bd^3}-\frac{77\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a}}{20bd^2\sqrt{\sin(2a+2bx)}}$$

```
[Out] -2*cos(b*x+a)^5/b/d/(d*tan(b*x+a))^(1/2)+77/20*cos(b*x+a)*(sin(a+1/4*Pi+b*x
)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*(d*tan(b*
x+a))^(1/2)/b/d^2/sin(2*b*x+2*a)^(1/2)-77/30*cos(b*x+a)^3*(d*tan(b*x+a))^(3
/2)/b/d^3-11/5*cos(b*x+a)^5*(d*tan(b*x+a))^(3/2)/b/d^3
```

Rubi [A] time = 0.19, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2609, 2612, 2615, 2572, 2639}

$$-\frac{11\cos^5(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3}-\frac{77\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{30bd^3}-\frac{77\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a}}{20bd^2\sqrt{\sin(2a+2bx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^5/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (-2*Cos[a + b*x]^5)/(b*d*Sqrt[d*Tan[a + b*x]]) - (77*Cos[a + b*x]*EllipticE
[a - Pi/4 + b*x, 2]*Sqrt[d*Tan[a + b*x]])/(20*b*d^2*Sqrt[Sin[2*a + 2*b*x]])
 - (77*Cos[a + b*x]^3*(d*Tan[a + b*x])^(3/2))/(30*b*d^3) - (11*Cos[a + b*x]
^5*(d*Tan[a + b*x])^(3/2))/(5*b*d^3)
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cos^5(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx &= -\frac{2\cos^5(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{11\int \cos^5(a+bx)\sqrt{d\tan(a+bx)}\,dx}{d^2}\\
&= -\frac{2\cos^5(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{11\cos^5(a+bx)(d\tan(a+bx))^{3/2}}{5bd^3} - \frac{77\int \cos^3(a+bx)\sqrt{d\tan(\ldots}{10d^2}\\
&= -\frac{2\cos^5(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{77\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{30bd^3} - \frac{11\cos^5(a+bx)(d\tan(a+\ldots}{5bd^3}\\
&= -\frac{2\cos^5(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{77\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{30bd^3} - \frac{11\cos^5(a+bx)(d\tan(a+\ldots}{5bd^3}\\
&= -\frac{2\cos^5(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{77\cos^3(a+bx)(d\tan(a+bx))^{3/2}}{30bd^3} - \frac{11\cos^5(a+bx)(d\tan(a+\ldots}{5bd^3}\\
&= -\frac{2\cos^5(a+bx)}{bd\sqrt{d\tan(a+bx)}} - \frac{77\cos(a+bx)E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{d\tan(a+bx)}}{20bd^2\sqrt{\sin(2a+2bx)}} - \frac{77\cos^3(a+\ldots}{}
\end{aligned}$$

Mathematica [C] time = 0.85, size = 89, normalized size = 0.63

$$\frac{\sin(a+bx)\left(-308\tan^2(a+bx)\sqrt{\sec^2(a+bx)}\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+34\cos(2(a+bx))+3\cos(4(a+bx\ldots\right.}{120b(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[a + b*x]^5/(d*Tan[a + b*x])^(3/2),x]
```

```
[Out] (Sin[a + b*x]*(-277 + 34*Cos[2*(a + b*x)] + 3*Cos[4*(a + b*x)] - 308*Hyperg
eometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sqrt[Sec[a + b*x]^2]*Tan[a + b*
x]^2))/(120*b*(d*Tan[a + b*x])^(3/2))
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(bx+a\right)}\,\cos\left(bx+a\right)^{5}}{d^{2}\tan\left(bx+a\right)^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^5/(d*tan(b*x+a))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*cos(b*x + a)^5/(d^2*tan(b*x + a)^2), x)
```

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

$$\int\frac{\cos\left(bx+a\right)^{5}}{\left(d\tan\left(bx+a\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^5/(d*tan(b*x+a))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(cos(b*x + a)^5/(d*tan(b*x + a))^(3/2), x)
```

maple [B] time = 0.54, size = 536, normalized size = 3.77

$$\left(12\sqrt{2}\,\left(\cos^{6}\left(bx+a\right)\right)+22\left(\cos^{4}\left(bx+a\right)\right)\sqrt{2}-231\,\mathrm{EllipticF}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\cos\left(bx+a\right)\sqrt{\frac{-1\cdots}{\mathrm{s}\cdots}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^5/(d*tan(b*x+a))^(3/2),x)
```

```
[Out] 1/120/b*(12*cos(b*x+a)^6*2^(1/2)+22*cos(b*x+a)^4*2^(1/2)-231*EllipticF((-(-
sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos
(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-
(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)+462*EllipticE((-(-sin(b*x+a)-1
+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin
(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)
-1+cos(b*x+a))/sin(b*x+a))^(1/2)-231*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))
```

```
/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos
(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+
a))^(1/2)+462*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*
2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin
(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)+77*cos(b*x+a)
^2*2^(1/2)-231*cos(b*x+a)*2^(1/2))*sin(b*x+a)/cos(b*x+a)^2/(d*sin(b*x+a)/co
s(b*x+a))^(3/2)*2^(1/2)
```

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

$$\int \frac{\cos(bx+a)^5}{(d\tan(bx+a))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^5/(d*tan(b*x+a))^(3/2),x, algorithm="maxima")
[Out] integrate(cos(b*x + a)^5/(d*tan(b*x + a))^(3/2), x)
```

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

$$\int \frac{\cos(a+b\,x)^5}{(d\tan(a+b\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^5/(d*tan(a + b*x))^(3/2),x)
[Out] int(cos(a + b*x)^5/(d*tan(a + b*x))^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**5/(d*tan(b*x+a))**(3/2),x)
[Out] Timed out
```

3.269 $\int \frac{\sec(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=82

$$-\frac{\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{3bd^2\sqrt{d\tan(a+bx)}}-\frac{2\sec(a+bx)}{3bd(d\tan(a+bx))^{3/2}}$$

```
[Out] 1/3*(sin(a+1/4*Pi+b*x)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticF(cos(a+1/4*Pi+b*
x),2^(1/2))*sec(b*x+a)*sin(2*b*x+2*a)^(1/2)/b/d^2/(d*tan(b*x+a))^(1/2)-2/3*
sec(b*x+a)/b/d/(d*tan(b*x+a))^(3/2)
```

Rubi [A] time = 0.09, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2609, 2614, 2573, 2641}

$$-\frac{\sqrt{\sin(2a+2bx)}\,\sec(a+bx)F\left(a+bx-\frac{\pi}{4}\middle|2\right)}{3bd^2\sqrt{d\tan(a+bx)}}-\frac{2\sec(a+bx)}{3bd(d\tan(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (-2*Sec[a + b*x])/(3*b*d*(d*Tan[a + b*x])^(3/2)) - (EllipticF[a - Pi/4 + b*
x, 2]*Sec[a + b*x]*Sqrt[Sin[2*a + 2*b*x]])/(3*b*d^2*Sqrt[d*Tan[a + b*x]])
```

Rule 2573

```
Int[1/(Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_
)]]), x_Symbol] :> Dist[Sqrt[Sin[2*e + 2*f*x]]/(Sqrt[a*Sin[e + f*x]]*Sqrt[b
*Cos[e + f*x]]), Int[1/Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}
, x]
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2614

```
Int[sec[(e_.) + (f_.)*(x_)]/Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]], x_Symbol]
:> Dist[Sqrt[Sin[e + f*x]]/(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]]), Int[1
```

```
/(Sqrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]]), x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sec(a+bx)}{(d\tan(a+bx))^{5/2}}\,dx &= -\frac{2\sec(a+bx)}{3bd(d\tan(a+bx))^{3/2}}-\frac{\int \frac{\sec(a+bx)}{\sqrt{d\tan(a+bx)}}\,dx}{3d^2}\\ &= -\frac{2\sec(a+bx)}{3bd(d\tan(a+bx))^{3/2}}-\frac{\sqrt{\sin(a+bx)}\int \frac{1}{\sqrt{\cos(a+bx)}\sqrt{\sin(a+bx)}}\,dx}{3d^2\sqrt{\cos(a+bx)}\sqrt{d\tan(a+bx)}}\\ &= -\frac{2\sec(a+bx)}{3bd(d\tan(a+bx))^{3/2}}-\frac{\left(\sec(a+bx)\sqrt{\sin(2a+2bx)}\right)\int \frac{1}{\sqrt{\sin(2a+2bx)}}\,dx}{3d^2\sqrt{d\tan(a+bx)}}\\ &= -\frac{2\sec(a+bx)}{3bd(d\tan(a+bx))^{3/2}}-\frac{F\left(a-\frac{\pi}{4}+bx\middle|2\right)\sec(a+bx)\sqrt{\sin(2a+2bx)}}{3bd^2\sqrt{d\tan(a+bx)}}\end{aligned}$$

Mathematica [C] time = 0.69, size = 113, normalized size = 1.38

$$\frac{2\cos(2(a+bx))\csc(a+bx)\sqrt{\sec^2(a+bx)}\left(\sqrt{\sec^2(a+bx)}-\sqrt[4]{-1}\tan^{\frac{3}{2}}(a+bx)F\left(i\sinh^{-1}\left(\sqrt[4]{-1}\sqrt{\tan(a+bx)}\right.\right.\right.}{3bd^2\left(\tan^2(a+bx)-1\right)\sqrt{d\tan(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]/(d*Tan[a + b*x])^(5/2),x]
```

```
[Out] (2*Cos[2*(a + b*x)]*Csc[a + b*x]*Sqrt[Sec[a + b*x]^2]*(Sqrt[Sec[a + b*x]^2]
 - (-1)^(1/4)*EllipticF[I*ArcSinh[(-1)^(1/4)*Sqrt[Tan[a + b*x]]], -1]*Tan[a
 + b*x]^(3/2)))/(3*b*d^2*Sqrt[d*Tan[a + b*x]]*(-1 + Tan[a + b*x]^2))
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan(bx+a)}\,\sec(bx+a)}{d^3\tan(bx+a)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="fricas")

[Out] integral(sqrt(d*tan(b*x + a))*sec(b*x + a)/(d^3*tan(b*x + a)^3), x)

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

$$\int \frac{\sec(bx+a)}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="giac")

[Out] integrate(sec(b*x + a)/(d*tan(b*x + a))^(5/2), x)

maple [B] time = 0.44, size = 306, normalized size = 3.73

$$-\frac{(\cos(bx+a)+1)^2(-1+\cos(bx+a))^2\left(\sin(bx+a)\cos(bx+a)\,\mathrm{EllipticF}\left(\sqrt{-\frac{-\sin(bx+a)-1+\cos(bx+a)}{\sin(bx+a)}},\frac{\sqrt{2}}{2}\right)\sqrt{\frac{-1\cdots}{\mathrm{s}\cdots}}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sec(b*x+a)/(d*tan(b*x+a))^(5/2),x)

[Out] -1/3/b*(cos(b*x+a)+1)^2*(-1+cos(b*x+a))^2*(sin(b*x+a)*cos(b*x+a)*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)+sin(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+cos(b*x+a)*2^(1/2))/sin(b*x+a)^3/cos(b*x+a)^3/(d*sin(b*x+a)/cos(b*x+a))^(5/2)*2^(1/2)

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

$$\int \frac{\sec(bx+a)}{(d\tan(bx+a))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(b*x+a)/(d*tan(b*x+a))^(5/2),x, algorithm="maxima")

[Out] integrate(sec(b*x + a)/(d*tan(b*x + a))^(5/2), x)

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

$$\int \frac{1}{\cos (a + b\,x)\ (d \tan (a + b\,x))^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)*(d*tan(a + b*x))^(5/2)),x)
[Out] int(1/(cos(a + b*x)*(d*tan(a + b*x))^(5/2)), x)
```

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

$$\int \frac{\sec (a + bx)}{(d \tan (a + bx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)/(d*tan(b*x+a))**(5/2),x)
[Out] Integral(sec(a + b*x)/(d*tan(a + b*x))**(5/2), x)
```

3.270 $\int \frac{\sec^3(a+bx)}{(d\tan(a+bx))^{7/2}}\,dx$

Optimal. Leaf size=110

$$-\frac{4\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{5bd^4\sqrt{\sin(2a+2bx)}}-\frac{4\cos(a+bx)}{5bd^3\sqrt{d\tan(a+bx)}}-\frac{2\sec(a+bx)}{5bd(d\tan(a+bx))^{5/2}}$$

```
[Out] -4/5*cos(b*x+a)/b/d^3/(d*tan(b*x+a))^(1/2)+4/5*cos(b*x+a)*(sin(a+1/4*Pi+b*x
)^2)^(1/2)/sin(a+1/4*Pi+b*x)*EllipticE(cos(a+1/4*Pi+b*x),2^(1/2))*(d*tan(b*
x+a))^(1/2)/b/d^4/sin(2*b*x+2*a)^(1/2)-2/5*sec(b*x+a)/b/d/(d*tan(b*x+a))^(5
/2)
```

Rubi [A] time = 0.14, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2608, 2615, 2572, 2639}

$$-\frac{4\cos(a+bx)}{5bd^3\sqrt{d\tan(a+bx)}}-\frac{4\cos(a+bx)E\left(a+bx-\frac{\pi}{4}\middle|2\right)\sqrt{d\tan(a+bx)}}{5bd^4\sqrt{\sin(2a+2bx)}}-\frac{2\sec(a+bx)}{5bd(d\tan(a+bx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^3/(d*Tan[a + b*x])^(7/2),x]
```

```
[Out] (-2*Sec[a + b*x])/(5*b*d*(d*Tan[a + b*x])^(5/2)) - (4*Cos[a + b*x])/(5*b*d^
3*Sqrt[d*Tan[a + b*x]]) - (4*Cos[a + b*x]*EllipticE[a - Pi/4 + b*x, 2]*Sqrt
[d*Tan[a + b*x]])/(5*b*d^4*Sqrt[Sin[2*a + 2*b*x]])
```

Rule 2572

```
Int[Sqrt[cos[(e_.) + (f_.)*(x_)]*(b_.)]*Sqrt[(a_.)*sin[(e_.) + (f_.)*(x_)]]
, x_Symbol] :> Dist[(Sqrt[a*Sin[e + f*x]]*Sqrt[b*Cos[e + f*x]])/Sqrt[Sin[2*
e + 2*f*x]], Int[Sqrt[Sin[2*e + 2*f*x]], x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2615

```
Int[Sqrt[(b_.)*tan[(e_.) + (f_.)*(x_)]]/sec[(e_.) + (f_.)*(x_)], x_Symbol]
:> Dist[(Sqrt[Cos[e + f*x]]*Sqrt[b*Tan[e + f*x]])/Sqrt[Sin[e + f*x]], Int[S
qrt[Cos[e + f*x]]*Sqrt[Sin[e + f*x]], x], x] /; FreeQ[{b, e, f}, x]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sec^3(a+bx)}{(d\tan(a+bx))^{7/2}}\,dx &= -\frac{2\sec(a+bx)}{5bd(d\tan(a+bx))^{5/2}}+\frac{2\int \frac{\sec(a+bx)}{(d\tan(a+bx))^{3/2}}\,dx}{5d^2}\\ &= -\frac{2\sec(a+bx)}{5bd(d\tan(a+bx))^{5/2}}-\frac{4\cos(a+bx)}{5bd^3\sqrt{d\tan(a+bx)}}-\frac{4\int \cos(a+bx)\sqrt{d\tan(a+bx)}\,dx}{5d^4}\\ &= -\frac{2\sec(a+bx)}{5bd(d\tan(a+bx))^{5/2}}-\frac{4\cos(a+bx)}{5bd^3\sqrt{d\tan(a+bx)}}-\frac{\left(4\sqrt{\cos(a+bx)}\,\sqrt{d\tan(a+bx)}\right)\int \cdots}{5d^4\sqrt{\sin(a \cdots}}\\ &= -\frac{2\sec(a+bx)}{5bd(d\tan(a+bx))^{5/2}}-\frac{4\cos(a+bx)}{5bd^3\sqrt{d\tan(a+bx)}}-\frac{\left(4\cos(a+bx)\sqrt{d\tan(a+bx)}\right)\int \sqrt{\cdots}}{5d^4\sqrt{\sin(2a+2bx)}}\\ &= -\frac{2\sec(a+bx)}{5bd(d\tan(a+bx))^{5/2}}-\frac{4\cos(a+bx)}{5bd^3\sqrt{d\tan(a+bx)}}-\frac{4\cos(a+bx)E\left(a-\frac{\pi}{4}+bx\middle|2\right)\sqrt{d\,\mathrm{t}\cdots}}{5bd^4\sqrt{\sin(2a+2bx)}}\end{aligned}$$

Mathematica [C] time = 1.54, size = 103, normalized size = 0.94

$$-\frac{2\sin(a+bx)\sqrt{d\tan(a+bx)}\left(4\sec^2(a+bx)\,{}_2F_1\left(\frac{3}{4},\frac{3}{2};\frac{7}{4};-\tan^2(a+bx)\right)+3\left(\csc^4(a+bx)+\csc^2(a+bx)-2\right)\cdots\right.}{15bd^4\sqrt{\sec^2(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^3/(d*Tan[a + b*x])^(7/2),x]
```

```
[Out] (-2*(4*Hypergeometric2F1[3/4, 3/2, 7/4, -Tan[a + b*x]^2]*Sec[a + b*x]^2 + 3
*(-2 + Csc[a + b*x]^2 + Csc[a + b*x]^4)*Sqrt[Sec[a + b*x]^2])*Sin[a + b*x]*
Sqrt[d*Tan[a + b*x]])/(15*b*d^4*Sqrt[Sec[a + b*x]^2])
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\tan(bx+a)}\,\sec(bx+a)^3}{d^4\tan(bx+a)^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3/(d*tan(b*x+a))^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(b*x + a))*sec(b*x + a)^3/(d^4*tan(b*x + a)^4), x)
```

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

$$\int \frac{\sec(bx+a)^3}{(d\tan(bx+a))^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3/(d*tan(b*x+a))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sec(b*x + a)^3/(d*tan(b*x + a))^(7/2), x)
```

maple [B] time = 0.62, size = 986, normalized size = 8.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^3/(d*tan(b*x+a))^(7/2),x)
```

```
[Out] -1/5/b*(4*cos(b*x+a)^3*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(
1/2),1/2*2^(1/2))*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b
*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)-2*co
s(b*x+a)^3*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+s
in(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF((
-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))+4*cos(b*x+a)^2*E
llipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*(-(-si
n(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*
x+a))^(1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)-2*cos(b*x+a)^2*(-(-sin(b*x+a
)-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(
1/2)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*EllipticF((-(-sin(b*x+a)-1+cos(b*x+
a))/sin(b*x+a))^(1/2),1/2*2^(1/2))-4*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))
/sin(b*x+a))^(1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/
2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a
))/sin(b*x+a))^(1/2)+2*EllipticF((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(
1/2),1/2*2^(1/2))*cos(b*x+a)*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*
x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))
^(1/2)-4*EllipticE((-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/
2))*((-1+cos(b*x+a))/sin(b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+
a))^(1/2)*(-(-sin(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2)+2*EllipticF((-(-si
n(b*x+a)-1+cos(b*x+a))/sin(b*x+a))^(1/2),1/2*2^(1/2))*((-1+cos(b*x+a))/sin(
```

```
b*x+a))^(1/2)*((-1+cos(b*x+a)+sin(b*x+a))/sin(b*x+a))^(1/2)*(-(-sin(b*x+a)-
1+cos(b*x+a))/sin(b*x+a))^(1/2)-2*cos(b*x+a)^3*2^(1/2)+cos(b*x+a)^2*2^(1/2)
+2*cos(b*x+a)*2^(1/2))*sin(b*x+a)/cos(b*x+a)^4/(d*sin(b*x+a)/cos(b*x+a))^(7
/2)*2^(1/2)
```

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

$$\int \frac{\sec(bx+a)^3}{(d\tan(bx+a))^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3/(d*tan(b*x+a))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sec(b*x + a)^3/(d*tan(b*x + a))^(7/2), x)
```

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

$$\int \frac{1}{\cos(a+b\,x)^3\,(d\tan(a+b\,x))^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(a + b*x)^3*(d*tan(a + b*x))^(7/2)),x)
```

```
[Out] int(1/(cos(a + b*x)^3*(d*tan(a + b*x))^(7/2)), x)
```

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

$$\int \frac{\sec^3(a+bx)}{(d\tan(a+bx))^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**3/(d*tan(b*x+a))**(7/2),x)
```

```
[Out] Integral(sec(a + b*x)**3/(d*tan(a + b*x))**(7/2), x)
```

3.271 $\int \sec^{\frac{10}{3}}(e+fx)\sin^2(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{7}{3}}(e+fx)\,{}_2F_1\left(-\frac{7}{6},-\frac{1}{2};-\frac{1}{6};\cos^2(e+fx)\right)}{7f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/7*hypergeom([-7/6, -1/2],[-1/6],cos(f*x+e)^2)*sec(f*x+e)^(7/3)*sin(f*x+e)
/f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{7}{3}}(e+fx)\,{}_2F_1\left(-\frac{7}{6},-\frac{1}{2};-\frac{1}{6};\cos^2(e+fx)\right)}{7f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(10/3)*Sin[e + f*x]^2,x]
```

```
[Out] (3*Hypergeometric2F1[-7/6, -1/2, -1/6, Cos[e + f*x]^2]*Sec[e + f*x]^(7/3)*S
in[e + f*x])/(7*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{10}{3}}(e+fx)\sin^2(e+fx)\,dx = \left(\sqrt[3]{\cos(e+fx)}\,\sqrt[3]{\sec(e+fx)}\right)\int \frac{\sin^2(e+fx)}{\cos^{\frac{10}{3}}(e+fx)}\,dx$$

$$= \frac{3\,{}_2F_1\left(-\frac{7}{6},-\frac{1}{2};-\frac{1}{6};\cos^2(e+fx)\right)\sec^{\frac{7}{3}}(e+fx)\sin(e+fx)}{7f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.22, size = 77, normalized size = 1.45

$$\frac{3\sqrt[3]{\sec(e+fx)}\left(2\sin(e+fx)\sqrt[6]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)-3\sin(e+fx)+\tan(e+fx)\sec(e+f}{7f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(10/3)*Sin[e + f*x]^2,x]
```

```
[Out] (3*Sec[e + f*x]^(1/3)*(-3*Sin[e + f*x] + 2*(Cos[e + f*x]^2)^(1/6)*Hypergeom
etric2F1[1/6, 1/2, 3/2, Sin[e + f*x]^2]*Sin[e + f*x] + Sec[e + f*x]*Tan[e +
 f*x]))/(7*f)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sec\left(fx+e\right)^{\frac{4}{3}}\tan\left(fx+e\right)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(4/3)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral(sec(f*x + e)^(4/3)*tan(f*x + e)^2, x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{4}{3}}\tan\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(4/3)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^(4/3)*tan(f*x + e)^2, x)
```

maple [F] time = 0.25, size = 0, normalized size = 0.00

$$\int \left(\sec^{\frac{4}{3}}\left(fx+e\right)\right)\left(\tan^{2}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^(4/3)*tan(f*x+e)^2,x)
[Out] int(sec(f*x+e)^(4/3)*tan(f*x+e)^2,x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{4}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(4/3)*tan(f*x+e)^2,x, algorithm="maxima")
[Out] integrate(sec(f*x + e)^(4/3)*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\,{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)}^{4/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(1/cos(e + f*x))^(4/3),x)
[Out] int(tan(e + f*x)^2*(1/cos(e + f*x))^(4/3), x)
```

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

$$\int \tan^{2}{\left(e+fx\right)}\sec^{\frac{4}{3}}{\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**(4/3)*tan(f*x+e)**2,x)
[Out] Integral(tan(e + f*x)**2*sec(e + f*x)**(4/3), x)
```

3.272 $\int \sec^{\frac{8}{3}}(e+fx)\sin^2(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{5}{3}}(e+fx)\,{}_2F_1\left(-\frac{5}{6},-\frac{1}{2};\frac{1}{6};\cos^2(e+fx)\right)}{5f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/5*hypergeom([-5/6, -1/2],[1/6],cos(f*x+e)^2)*sec(f*x+e)^(5/3)*sin(f*x+e)/
f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{5}{3}}(e+fx)\,{}_2F_1\left(-\frac{5}{6},-\frac{1}{2};\frac{1}{6};\cos^2(e+fx)\right)}{5f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(8/3)*Sin[e + f*x]^2,x]
```

```
[Out] (3*Hypergeometric2F1[-5/6, -1/2, 1/6, Cos[e + f*x]^2]*Sec[e + f*x]^(5/3)*Si
n[e + f*x])/(5*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{8}{3}}(e+fx)\sin^2(e+fx)\,dx = \left(\cos^{\frac{2}{3}}(e+fx)\sec^{\frac{2}{3}}(e+fx)\right)\int \frac{\sin^2(e+fx)}{\cos^{\frac{8}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{5}{6},-\frac{1}{2};\frac{1}{6};\cos^2(e+fx)\right)\sec^{\frac{5}{3}}(e+fx)\sin(e+fx)}{5f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.09, size = 56, normalized size = 1.06

$$-\frac{3\sin(e+fx)\sec^{\frac{5}{3}}(e+fx)\left(\cos^2(e+fx)^{5/6}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{3}{2};\sin^2(e+fx)\right)-1\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(8/3)*Sin[e + f*x]^2,x]
```

```
[Out] (-3*(-1 + (Cos[e + f*x]^2)^(5/6)*Hypergeometric2F1[1/2, 5/6, 3/2, Sin[e + f
*x]^2])*Sec[e + f*x]^(5/3)*Sin[e + f*x])/(5*f)
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\sec\left(fx+e\right)^{\frac{2}{3}}\tan\left(fx+e\right)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(2/3)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral(sec(f*x + e)^(2/3)*tan(f*x + e)^2, x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{2}{3}}\tan\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(2/3)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^(2/3)*tan(f*x + e)^2, x)
```

maple [F] time = 0.25, size = 0, normalized size = 0.00

$$\int \left(\sec^{\frac{2}{3}}\left(fx+e\right)\right)\left(\tan^2\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^(2/3)*tan(f*x+e)^2,x)
```

```
[Out] int(sec(f*x+e)^(2/3)*tan(f*x+e)^2,x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(2/3)*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate(sec(f*x + e)^(2/3)*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\left(\frac{1}{\cos\left(e+f\,x\right)}\right)^{2/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(1/cos(e + f*x))^(2/3),x)
```

```
[Out] int(tan(e + f*x)^2*(1/cos(e + f*x))^(2/3), x)
```

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

$$\int \tan^{2}\left(e+fx\right)\sec^{\frac{2}{3}}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**(2/3)*tan(f*x+e)**2,x)
```

```
[Out] Integral(tan(e + f*x)**2*sec(e + f*x)**(2/3), x)
```

3.273 $\int \sec^{\frac{7}{3}}(e+fx)\sin^2(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{4}{3}}(e+fx)\,{}_2F_1\left(-\frac{2}{3},-\frac{1}{2};\frac{1}{3};\cos^2(e+fx)\right)}{4f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/4*hypergeom([-2/3, -1/2],[1/3],cos(f*x+e)^2)*sec(f*x+e)^(4/3)*sin(f*x+e)/
f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{4}{3}}(e+fx)\,{}_2F_1\left(-\frac{2}{3},-\frac{1}{2};\frac{1}{3};\cos^2(e+fx)\right)}{4f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(7/3)*Sin[e + f*x]^2,x]
```

```
[Out] (3*Hypergeometric2F1[-2/3, -1/2, 1/3, Cos[e + f*x]^2]*Sec[e + f*x]^(4/3)*Si
n[e + f*x])/(4*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{7}{3}}(e+fx)\sin^2(e+fx)\,dx = \left(\sqrt[3]{\cos(e+fx)}\,\sqrt[3]{\sec(e+fx)}\right)\int \frac{\sin^2(e+fx)}{\cos^{\frac{7}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{2}{3},-\frac{1}{2};\frac{1}{3};\cos^2(e+fx)\right)\sec^{\frac{4}{3}}(e+fx)\sin(e+fx)}{4f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.09, size = 56, normalized size = 1.06

$$-\frac{3\sin(e+fx)\sec^{\frac{4}{3}}(e+fx)\left(\cos^2(e+fx)^{2/3}\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{3}{2};\sin^2(e+fx)\right)-1\right)}{4f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(7/3)*Sin[e + f*x]^2,x]
```

```
[Out] (-3*(-1 + (Cos[e + f*x]^2)^(2/3)*Hypergeometric2F1[1/2, 2/3, 3/2, Sin[e + f
*x]^2])*Sec[e + f*x]^(4/3)*Sin[e + f*x])/(4*f)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\sec\left(fx+e\right)^{\frac{1}{3}}\tan\left(fx+e\right)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(1/3)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral(sec(f*x + e)^(1/3)*tan(f*x + e)^2, x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{1}{3}}\tan\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(1/3)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^(1/3)*tan(f*x + e)^2, x)
```

maple [F] time = 0.24, size = 0, normalized size = 0.00

$$\int \left(\sec^{\frac{1}{3}}\left(fx+e\right)\right)\left(\tan^2\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^(1/3)*tan(f*x+e)^2,x)
```

```
[Out] int(sec(f*x+e)^(1/3)*tan(f*x+e)^2,x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(1/3)*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate(sec(f*x + e)^(1/3)*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\,{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)}^{1/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(1/cos(e + f*x))^(1/3),x)
```

```
[Out] int(tan(e + f*x)^2*(1/cos(e + f*x))^(1/3), x)
```

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

$$\int \tan^{2}{\left(e + f x \right)} \sqrt[3]{\sec{\left(e + f x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**(1/3)*tan(f*x+e)**2,x)
```

```
[Out] Integral(tan(e + f*x)**2*sec(e + f*x)**(1/3), x)
```

3.274 $\int \sec^{\frac{5}{3}}(e+fx)\sin^2(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{2}{3}}(e+fx)\,{}_2F_1\left(-\frac{1}{2},-\frac{1}{3};\frac{2}{3};\cos^2(e+fx)\right)}{2f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/2*hypergeom([-1/2, -1/3],[2/3],cos(f*x+e)^2)*sec(f*x+e)^(2/3)*sin(f*x+e)/
f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{2}{3}}(e+fx)\,{}_2F_1\left(-\frac{1}{2},-\frac{1}{3};\frac{2}{3};\cos^2(e+fx)\right)}{2f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(5/3)*Sin[e + f*x]^2,x]
```

```
[Out] (3*Hypergeometric2F1[-1/2, -1/3, 2/3, Cos[e + f*x]^2]*Sec[e + f*x]^(2/3)*Si
n[e + f*x])/(2*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{5}{3}}(e+fx)\sin^2(e+fx)\,dx = \left(\cos^{\frac{2}{3}}(e+fx)\sec^{\frac{2}{3}}(e+fx)\right)\int \frac{\sin^2(e+fx)}{\cos^{\frac{5}{3}}(e+fx)}\,dx$$

$$= \frac{3\,{}_2F_1\left(-\frac{1}{2},-\frac{1}{3};\frac{2}{3};\cos^2(e+fx)\right)\sec^{\frac{2}{3}}(e+fx)\sin(e+fx)}{2f\sqrt{\sin^2(e+fx)}}$$

Mathematica [**A**] time = 0.08, size = 56, normalized size = 1.06

$$-\frac{3\sin(e+fx)\sec^{\frac{2}{3}}(e+fx)\left(\sqrt[3]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)-1\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(5/3)*Sin[e + f*x]^2,x]
```

```
[Out] (-3*(-1 + (Cos[e + f*x]^2)^(1/3)*Hypergeometric2F1[1/3, 1/2, 3/2, Sin[e + f
*x]^2])*Sec[e + f*x]^(2/3)*Sin[e + f*x])/(2*f)
```

fricas [**F**] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\tan\left(fx+e\right)^2}{\sec\left(fx+e\right)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/sec(f*x+e)^(1/3),x, algorithm="fricas")
```

```
[Out] integral(tan(f*x + e)^2/sec(f*x + e)^(1/3), x)
```

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

$$\int \frac{\tan\left(fx+e\right)^2}{\sec\left(fx+e\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/sec(f*x+e)^(1/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^2/sec(f*x + e)^(1/3), x)
```

maple [F] time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\tan^{2}\left(fx+e\right)}{\sec\left(fx+e\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^2/sec(f*x+e)^(1/3),x)
[Out] int(tan(f*x+e)^2/sec(f*x+e)^(1/3),x)
```

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

$$\int \frac{\tan\left(fx+e\right)^{2}}{\sec\left(fx+e\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/sec(f*x+e)^(1/3),x, algorithm="maxima")
[Out] integrate(tan(f*x + e)^2/sec(f*x + e)^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^{2}}{{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)}^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2/(1/cos(e + f*x))^(1/3),x)
[Out] int(tan(e + f*x)^2/(1/cos(e + f*x))^(1/3), x)
```

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

$$\int \frac{\tan^{2}\left(e+fx\right)}{\sqrt[3]{\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**2/sec(f*x+e)**(1/3),x)
[Out] Integral(tan(e + f*x)**2/sec(e + f*x)**(1/3), x)
```

3.275 $\int \sec^{\frac{4}{3}}(e+fx)\sin^2(e+fx)\,dx$

Optimal. Leaf size=51

$$\frac{3\sin(e+fx)\sqrt[3]{\sec(e+fx)}\ {}_2F_1\left(-\frac{1}{2},-\frac{1}{6};\frac{5}{6};\cos^2(e+fx)\right)}{f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3*hypergeom([-1/2, -1/6],[5/6],cos(f*x+e)^2)*sec(f*x+e)^(1/3)*sin(f*x+e)/f/
(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sqrt[3]{\sec(e+fx)}\ {}_2F_1\left(-\frac{1}{2},-\frac{1}{6};\frac{5}{6};\cos^2(e+fx)\right)}{f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(4/3)*Sin[e + f*x]^2,x]
```

```
[Out] (3*Hypergeometric2F1[-1/2, -1/6, 5/6, Cos[e + f*x]^2]*Sec[e + f*x]^(1/3)*Si
n[e + f*x])/(f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{4}{3}}(e+fx)\sin^2(e+fx)\,dx = \left(\sqrt[3]{\cos(e+fx)}\,\sqrt[3]{\sec(e+fx)}\right)\int \frac{\sin^2(e+fx)}{\cos^{\frac{4}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{1}{2},-\frac{1}{6};\frac{5}{6};\cos^2(e+fx)\right)\sqrt[3]{\sec(e+fx)}\,\sin(e+fx)}{f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.07, size = 54, normalized size = 1.06

$$-\frac{3\sin(e+fx)\sqrt[3]{\sec(e+fx)}\left(\sqrt[6]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)-1\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(4/3)*Sin[e + f*x]^2,x]
```

```
[Out] (-3*(-1 + (Cos[e + f*x]^2)^(1/6)*Hypergeometric2F1[1/6, 1/2, 3/2, Sin[e + f
*x]^2])*Sec[e + f*x]^(1/3)*Sin[e + f*x])/f
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\tan\left(fx+e\right)^2}{\sec\left(fx+e\right)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/sec(f*x+e)^(2/3),x, algorithm="fricas")
```

```
[Out] integral(tan(f*x + e)^2/sec(f*x + e)^(2/3), x)
```

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

$$\int \frac{\tan\left(fx+e\right)^2}{\sec\left(fx+e\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/sec(f*x+e)^(2/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^2/sec(f*x + e)^(2/3), x)
```

maple [F] time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{\tan^{2}\left(fx+e\right)}{\sec\left(fx+e\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^2/sec(f*x+e)^(2/3),x)
[Out] int(tan(f*x+e)^2/sec(f*x+e)^(2/3),x)
```

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

$$\int \frac{\tan\left(fx+e\right)^{2}}{\sec\left(fx+e\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/sec(f*x+e)^(2/3),x, algorithm="maxima")
[Out] integrate(tan(f*x + e)^2/sec(f*x + e)^(2/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^2}{{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)}^{2/3}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2/(1/cos(e + f*x))^(2/3),x)
[Out] int(tan(e + f*x)^2/(1/cos(e + f*x))^(2/3), x)
```

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

$$\int \frac{\tan^{2}{\left(e + f x \right)}}{\sec^{\frac{2}{3}}{\left(e + f x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**2/sec(f*x+e)**(2/3),x)
[Out] Integral(tan(e + f*x)**2/sec(e + f*x)**(2/3), x)
```

3.276 $\int \sec^{\frac{16}{3}}(e+fx)\sin^4(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{13}{3}}(e+fx)\,{}_2F_1\left(-\frac{13}{6},-\frac{3}{2};-\frac{7}{6};\cos^2(e+fx)\right)}{13f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/13*hypergeom([-13/6, -3/2],[-7/6],cos(f*x+e)^2)*sec(f*x+e)^(13/3)*sin(f*x
+e)/f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{13}{3}}(e+fx)\,{}_2F_1\left(-\frac{13}{6},-\frac{3}{2};-\frac{7}{6};\cos^2(e+fx)\right)}{13f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(16/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Hypergeometric2F1[-13/6, -3/2, -7/6, Cos[e + f*x]^2]*Sec[e + f*x]^(13/3)
*Sin[e + f*x])/(13*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{16}{3}}(e+fx)\sin^4(e+fx)\,dx = \left(\sqrt[3]{\cos(e+fx)}\sqrt[3]{\sec(e+fx)}\right)\int \frac{\sin^4(e+fx)}{\cos^{\frac{16}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{13}{6},-\frac{3}{2};-\frac{7}{6};\cos^2(e+fx)\right)\sec^{\frac{13}{3}}(e+fx)\sin(e+fx)}{13f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 1.11, size = 89, normalized size = 1.68

$$\frac{3\sqrt[3]{\sec(e+fx)}\left(-18\sin(e+fx)\sqrt[6]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)+27\sin(e+fx)+\tan(e+fx)\sec(e+\right.}{91f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(16/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Sec[e + f*x]^(1/3)*(27*Sin[e + f*x] - 18*(Cos[e + f*x]^2)^(1/6)*Hypergeo
metric2F1[1/6, 1/2, 3/2, Sin[e + f*x]^2]*Sin[e + f*x] + Sec[e + f*x]*(-16 +
 7*Sec[e + f*x]^2)*Tan[e + f*x]))/(91*f)
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sec\left(fx+e\right)^{\frac{4}{3}}\tan\left(fx+e\right)^4, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(4/3)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral(sec(f*x + e)^(4/3)*tan(f*x + e)^4, x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{4}{3}}\tan\left(fx+e\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(4/3)*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^(4/3)*tan(f*x + e)^4, x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \left(\sec^{\frac{4}{3}}\left(fx+e\right)\right)\left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^(4/3)*tan(f*x+e)^4,x)
[Out] int(sec(f*x+e)^(4/3)*tan(f*x+e)^4,x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(4/3)*tan(f*x+e)^4,x, algorithm="maxima")
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\,{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)}^{4/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(1/cos(e + f*x))^(4/3),x)
[Out] int(tan(e + f*x)^4*(1/cos(e + f*x))^(4/3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**(4/3)*tan(f*x+e)**4,x)
[Out] Timed out
```

3.277 $\int \sec^{\frac{14}{3}}(e+fx)\sin^4(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{11}{3}}(e+fx)\,{}_2F_1\left(-\frac{11}{6},-\frac{3}{2};-\frac{5}{6};\cos^2(e+fx)\right)}{11f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/11*hypergeom([-11/6, -3/2],[-5/6],cos(f*x+e)^2)*sec(f*x+e)^(11/3)*sin(f*x
+e)/f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{11}{3}}(e+fx)\,{}_2F_1\left(-\frac{11}{6},-\frac{3}{2};-\frac{5}{6};\cos^2(e+fx)\right)}{11f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(14/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Hypergeometric2F1[-11/6, -3/2, -5/6, Cos[e + f*x]^2]*Sec[e + f*x]^(11/3)
*Sin[e + f*x])/(11*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{14}{3}}(e+fx)\sin^4(e+fx)\,dx = \left(\cos^{\frac{2}{3}}(e+fx)\sec^{\frac{2}{3}}(e+fx)\right)\int \frac{\sin^4(e+fx)}{\cos^{\frac{14}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{11}{6},-\frac{3}{2};-\frac{5}{6};\cos^2(e+fx)\right)\sec^{\frac{11}{3}}(e+fx)\sin(e+fx)}{11f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.86, size = 78, normalized size = 1.47

$$\frac{3\sin(e+fx)\left(\frac{9\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{3}{2};\sin^2(e+fx)\right)}{\sqrt[6]{\cos^2(e+fx)}}-(7\cos(2(e+fx))+2)\sec^4(e+fx)\right)}{55f\sqrt[3]{\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(14/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*((9*Hypergeometric2F1[1/2, 5/6, 3/2, Sin[e + f*x]^2])/(Cos[e + f*x]^2)^(
1/6) - (2 + 7*Cos[2*(e + f*x)])*Sec[e + f*x]^4)*Sin[e + f*x])/(55*f*Sec[e +
 f*x]^(1/3))
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\sec\left(fx+e\right)^{\frac{2}{3}}\tan\left(fx+e\right)^4,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(2/3)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral(sec(f*x + e)^(2/3)*tan(f*x + e)^4, x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{2}{3}}\tan\left(fx+e\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(2/3)*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^(2/3)*tan(f*x + e)^4, x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \left(\sec^{\frac{2}{3}}\left(fx+e\right)\right)\left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^(2/3)*tan(f*x+e)^4,x)
[Out] int(sec(f*x+e)^(2/3)*tan(f*x+e)^4,x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(2/3)*tan(f*x+e)^4,x, algorithm="maxima")
[Out] integrate(sec(f*x + e)^(2/3)*tan(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\,{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)}^{2/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(1/cos(e + f*x))^(2/3),x)
[Out] int(tan(e + f*x)^4*(1/cos(e + f*x))^(2/3), x)
```

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

$$\int \tan^{4}{\left(e+fx\right)}\sec^{\frac{2}{3}}{\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**(2/3)*tan(f*x+e)**4,x)
[Out] Integral(tan(e + f*x)**4*sec(e + f*x)**(2/3), x)
```

3.278 $\int \sec^{\frac{13}{3}}(e+fx)\sin^4(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{10}{3}}(e+fx)\,{}_2F_1\left(-\frac{5}{3},-\frac{3}{2};-\frac{2}{3};\cos^2(e+fx)\right)}{10f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/10*hypergeom([-5/3, -3/2],[-2/3],cos(f*x+e)^2)*sec(f*x+e)^(10/3)*sin(f*x+
e)/f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{10}{3}}(e+fx)\,{}_2F_1\left(-\frac{5}{3},-\frac{3}{2};-\frac{2}{3};\cos^2(e+fx)\right)}{10f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(13/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Hypergeometric2F1[-5/3, -3/2, -2/3, Cos[e + f*x]^2]*Sec[e + f*x]^(10/3)*
Sin[e + f*x])/(10*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{13}{3}}(e+fx)\sin^4(e+fx)\,dx = \left(\sqrt[3]{\cos(e+fx)}\,\sqrt[3]{\sec(e+fx)}\right)\int \frac{\sin^4(e+fx)}{\cos^{\frac{13}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{5}{3},-\frac{3}{2};-\frac{2}{3};\cos^2(e+fx)\right)\sec^{\frac{10}{3}}(e+fx)\sin(e+fx)}{10f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.75, size = 77, normalized size = 1.45

$$\frac{3\sin(e+fx)\left(\frac{9\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{3}{2};\sin^2(e+fx)\right)}{\sqrt[3]{\cos^2(e+fx)}}+\left(4\sec^2(e+fx)-13\right)\sec^2(e+fx)\right)}{40f\sec^{\frac{2}{3}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(13/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*((9*Hypergeometric2F1[1/2, 2/3, 3/2, Sin[e + f*x]^2])/(Cos[e + f*x]^2)^(
1/3) + Sec[e + f*x]^2*(-13 + 4*Sec[e + f*x]^2))*Sin[e + f*x])/(40*f*Sec[e +
 f*x]^(2/3))
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sec\left(fx+e\right)^{\frac{1}{3}}\tan\left(fx+e\right)^4,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(1/3)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral(sec(f*x + e)^(1/3)*tan(f*x + e)^4, x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{1}{3}}\tan\left(fx+e\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(1/3)*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate(sec(f*x + e)^(1/3)*tan(f*x + e)^4, x)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \left(\sec^{\frac{1}{3}}\left(fx+e\right)\right)\left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(f*x+e)^(1/3)*tan(f*x+e)^4,x)
[Out] int(sec(f*x+e)^(1/3)*tan(f*x+e)^4,x)
```

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

$$\int \sec\left(fx+e\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)^(1/3)*tan(f*x+e)^4,x, algorithm="maxima")
[Out] integrate(sec(f*x + e)^(1/3)*tan(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\,{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)}^{1/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(1/cos(e + f*x))^(1/3),x)
[Out] int(tan(e + f*x)^4*(1/cos(e + f*x))^(1/3), x)
```

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

$$\int \tan^{4}{\left(e+fx\right)}\sqrt[3]{\sec{\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(f*x+e)**(1/3)*tan(f*x+e)**4,x)
[Out] Integral(tan(e + f*x)**4*sec(e + f*x)**(1/3), x)
```

3.279 $\int \sec^{\frac{11}{3}}(e+fx)\sin^4(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{8}{3}}(e+fx)\,{}_2F_1\left(-\frac{3}{2},-\frac{4}{3};-\frac{1}{3};\cos^2(e+fx)\right)}{8f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/8*hypergeom([-3/2, -4/3],[-1/3],cos(f*x+e)^2)*sec(f*x+e)^(8/3)*sin(f*x+e)
/f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{8}{3}}(e+fx)\,{}_2F_1\left(-\frac{3}{2},-\frac{4}{3};-\frac{1}{3};\cos^2(e+fx)\right)}{8f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(11/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Hypergeometric2F1[-3/2, -4/3, -1/3, Cos[e + f*x]^2]*Sec[e + f*x]^(8/3)*S
in[e + f*x])/(8*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{11}{3}}(e+fx)\sin^4(e+fx)\,dx = \left(\cos^{\frac{2}{3}}(e+fx)\sec^{\frac{2}{3}}(e+fx)\right)\int \frac{\sin^4(e+fx)}{\cos^{\frac{11}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{3}{2},-\frac{4}{3};-\frac{1}{3};\cos^2(e+fx)\right)\sec^{\frac{8}{3}}(e+fx)\sin(e+fx)}{8f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.20, size = 78, normalized size = 1.47

$$\frac{3\sec^{\frac{2}{3}}(e+fx)\left(9\sin(e+fx)\sqrt[3]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)-11\sin(e+fx)+2\tan(e+fx)\sec(e+fx)\right)}{16f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(11/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Sec[e + f*x]^(2/3)*(-11*Sin[e + f*x] + 9*(Cos[e + f*x]^2)^(1/3)*Hypergeo
metric2F1[1/3, 1/2, 3/2, Sin[e + f*x]^2]*Sin[e + f*x] + 2*Sec[e + f*x]*Tan[
e + f*x]))/(16*f)
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\tan\left(fx+e\right)^4}{\sec\left(fx+e\right)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/sec(f*x+e)^(1/3),x, algorithm="fricas")
```

```
[Out] integral(tan(f*x + e)^4/sec(f*x + e)^(1/3), x)
```

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

$$\int \frac{\tan\left(fx+e\right)^4}{\sec\left(fx+e\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/sec(f*x+e)^(1/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^4/sec(f*x + e)^(1/3), x)
```

maple [F] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{\tan^4\left(fx+e\right)}{\sec\left(fx+e\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^4/sec(f*x+e)^(1/3),x)
[Out] int(tan(f*x+e)^4/sec(f*x+e)^(1/3),x)
```

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

$$\int \frac{\tan\left(fx+e\right)^4}{\sec\left(fx+e\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/sec(f*x+e)^(1/3),x, algorithm="maxima")
[Out] integrate(tan(f*x + e)^4/sec(f*x + e)^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^4}{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4/(1/cos(e + f*x))^(1/3),x)
[Out] int(tan(e + f*x)^4/(1/cos(e + f*x))^(1/3), x)
```

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

$$\int \frac{\tan^4\left(e+fx\right)}{\sqrt[3]{\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**4/sec(f*x+e)**(1/3),x)
[Out] Integral(tan(e + f*x)**4/sec(e + f*x)**(1/3), x)
```

3.280 $\int \sec^{\frac{10}{3}}(e+fx)\sin^4(e+fx)\,dx$

Optimal. Leaf size=53

$$\frac{3\sin(e+fx)\sec^{\frac{7}{3}}(e+fx)\,{}_2F_1\left(-\frac{3}{2},-\frac{7}{6};-\frac{1}{6};\cos^2(e+fx)\right)}{7f\sqrt{\sin^2(e+fx)}}$$

```
[Out] 3/7*hypergeom([-3/2, -7/6],[-1/6],cos(f*x+e)^2)*sec(f*x+e)^(7/3)*sin(f*x+e)
/f/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2632, 2576}

$$\frac{3\sin(e+fx)\sec^{\frac{7}{3}}(e+fx)\,{}_2F_1\left(-\frac{3}{2},-\frac{7}{6};-\frac{1}{6};\cos^2(e+fx)\right)}{7f\sqrt{\sin^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[e + f*x]^(10/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Hypergeometric2F1[-3/2, -7/6, -1/6, Cos[e + f*x]^2]*Sec[e + f*x]^(7/3)*S
in[e + f*x])/(7*f*Sqrt[Sin[e + f*x]^2])
```

Rule 2576

```
Int[(cos[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Sin[e + f*x])^(2*Fr
acPart[(n - 1)/2])*(a*Cos[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
 - n)/2, (3 + m)/2, Cos[e + f*x]^2])/(a*f*(m + 1)*(Sin[e + f*x]^2)^FracPart
[(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x] && SimplerQ[n, m]
```

Rule 2632

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sec[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Dist[(a^2*(a*Sec[e + f*x])^(m - 1)*(b*Csc[e + f*x])^(n + 1
)*(a*Cos[e + f*x])^(m - 1)*(b*Sin[e + f*x])^(n + 1))/b^2, Int[1/((a*Cos[e +
 f*x])^m*(b*Sin[e + f*x])^n), x], x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rubi steps

$$\int \sec^{\frac{10}{3}}(e+fx)\sin^4(e+fx)\,dx = \left(\sqrt[3]{\cos(e+fx)}\,\sqrt[3]{\sec(e+fx)}\right)\int \frac{\sin^4(e+fx)}{\cos^{\frac{10}{3}}(e+fx)}\,dx$$
$$= \frac{3\,{}_2F_1\left(-\frac{3}{2},-\frac{7}{6};-\frac{1}{6};\cos^2(e+fx)\right)\sec^{\frac{7}{3}}(e+fx)\sin(e+fx)}{7f\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.25, size = 77, normalized size = 1.45

$$\frac{3\sqrt[3]{\sec(e+fx)}\left(9\sin(e+fx)\sqrt[6]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)-10\sin(e+fx)+\tan(e+fx)\sec(e+fx\right.}{7f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[e + f*x]^(10/3)*Sin[e + f*x]^4,x]
```

```
[Out] (3*Sec[e + f*x]^(1/3)*(-10*Sin[e + f*x] + 9*(Cos[e + f*x]^2)^(1/6)*Hypergeo
metric2F1[1/6, 1/2, 3/2, Sin[e + f*x]^2]*Sin[e + f*x] + Sec[e + f*x]*Tan[e
+ f*x]))/(7*f)
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\tan\left(fx+e\right)^4}{\sec\left(fx+e\right)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/sec(f*x+e)^(2/3),x, algorithm="fricas")
```

```
[Out] integral(tan(f*x + e)^4/sec(f*x + e)^(2/3), x)
```

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

$$\int \frac{\tan\left(fx+e\right)^4}{\sec\left(fx+e\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/sec(f*x+e)^(2/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^4/sec(f*x + e)^(2/3), x)
```

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{\tan^4\left(fx+e\right)}{\sec\left(fx+e\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^4/sec(f*x+e)^(2/3),x)
[Out] int(tan(f*x+e)^4/sec(f*x+e)^(2/3),x)
```

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

$$\int \frac{\tan\left(fx+e\right)^4}{\sec\left(fx+e\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/sec(f*x+e)^(2/3),x, algorithm="maxima")
[Out] integrate(tan(f*x + e)^4/sec(f*x + e)^(2/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^4}{\left(\frac{1}{\cos\left(e+f\,x\right)}\right)^{2/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4/(1/cos(e + f*x))^(2/3),x)
[Out] int(tan(e + f*x)^4/(1/cos(e + f*x))^(2/3), x)
```

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

$$\int \frac{\tan^4\left(e+fx\right)}{\sec^{\frac{2}{3}}\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**4/sec(f*x+e)**(2/3),x)
[Out] Integral(tan(e + f*x)**4/sec(e + f*x)**(2/3), x)
```

3.281 $\int (d\sec(e+fx))^{4/3}\tan^2(e+fx)\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{13/6}\tan^3(e+fx)(d\sec(e+fx))^{4/3}\,{}_2F_1\left(\frac{3}{2},\frac{13}{6};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

```
[Out] 1/3*(cos(f*x+e)^2)^(13/6)*hypergeom([3/2, 13/6],[5/2],sin(f*x+e)^2)*(d*sec(
f*x+e))^(4/3)*tan(f*x+e)^3/f
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{13/6}\tan^3(e+fx)(d\sec(e+fx))^{4/3}\,{}_2F_1\left(\frac{3}{2},\frac{13}{6};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(4/3)*Tan[e + f*x]^2,x]
```

```
[Out] ((Cos[e + f*x]^2)^(13/6)*Hypergeometric2F1[3/2, 13/6, 5/2, Sin[e + f*x]^2]*
(d*Sec[e + f*x])^(4/3)*Tan[e + f*x]^3)/(3*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (d\sec(e+fx))^{4/3}\tan^2(e+fx)\,dx=\frac{\cos^2(e+fx)^{13/6}\,{}_2F_1\left(\frac{3}{2},\frac{13}{6};\frac{5}{2};\sin^2(e+fx)\right)(d\sec(e+fx))^{4/3}\tan^3(e+fx)}{3f}$$

Mathematica [A] time = 0.29, size = 80, normalized size = 1.40

$$\frac{3d\sqrt[3]{d\sec(e+fx)}\left(2\sin(e+fx)\sqrt[6]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)-3\sin(e+fx)+\tan(e+fx)\sec(e+f}{7f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(4/3)*Tan[e + f*x]^2,x]
```

```
[Out] (3*d*(d*Sec[e + f*x])^(1/3)*(-3*Sin[e + f*x] + 2*(Cos[e + f*x]^2)^(1/6)*Hyp
ergeometric2F1[1/6, 1/2, 3/2, Sin[e + f*x]^2]*Sin[e + f*x] + Sec[e + f*x]*T
an[e + f*x]))/(7*f)
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}d\sec\left(fx+e\right)\tan\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(4/3)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(1/3)*d*sec(f*x + e)*tan(f*x + e)^2, x)
```

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

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{4}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(4/3)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(4/3)*tan(f*x + e)^2, x)
```

maple [F] time = 0.24, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{4}{3}}\left(\tan^{2}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(4/3)*tan(f*x+e)^2,x)
```

```
[Out] int((d*sec(f*x+e))^(4/3)*tan(f*x+e)^2,x)
```

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

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{4}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(4/3)*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(4/3)*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{4/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(d/cos(e + f*x))^(4/3),x)
[Out] int(tan(e + f*x)^2*(d/cos(e + f*x))^(4/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(e+fx\right)\right)^{\frac{4}{3}}\tan^2\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(4/3)*tan(f*x+e)**2,x)
[Out] Integral((d*sec(e + f*x))**(4/3)*tan(e + f*x)**2, x)
```

3.282 $\int (d\sec(e+fx))^{2/3}\tan^2(e+fx)\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{11/6}\tan^3(e+fx)(d\sec(e+fx))^{2/3}\,{}_2F_1\left(\frac{3}{2},\frac{11}{6};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

```
[Out] 1/3*(cos(f*x+e)^2)^(11/6)*hypergeom([3/2, 11/6],[5/2],sin(f*x+e)^2)*(d*sec(
f*x+e))^(2/3)*tan(f*x+e)^3/f
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{11/6}\tan^3(e+fx)(d\sec(e+fx))^{2/3}\,{}_2F_1\left(\frac{3}{2},\frac{11}{6};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(2/3)*Tan[e + f*x]^2,x]
```

```
[Out] ((Cos[e + f*x]^2)^(11/6)*Hypergeometric2F1[3/2, 11/6, 5/2, Sin[e + f*x]^2]*
(d*Sec[e + f*x])^(2/3)*Tan[e + f*x]^3)/(3*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (d\sec(e+fx))^{2/3}\tan^2(e+fx)\,dx = \frac{\cos^2(e+fx)^{11/6}\,{}_2F_1\left(\frac{3}{2},\frac{11}{6};\frac{5}{2};\sin^2(e+fx)\right)(d\sec(e+fx))^{2/3}\tan^3(e+fx)}{3f}$$

Mathematica [A] time = 0.31, size = 80, normalized size = 1.40

$$\frac{3(d\sec(e+fx))^{2/3}\left(2\sqrt[6]{\cos^2(e+fx)}\,\tan(e+fx)-\sin(2(e+fx))\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{3}{2};\sin^2(e+fx)\right)\right)}{10f\sqrt[6]{\cos^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(2/3)*Tan[e + f*x]^2,x]
```

```
[Out] (3*(d*Sec[e + f*x])^(2/3)*(-(Hypergeometric2F1[1/2, 5/6, 3/2, Sin[e + f*x]^
2]*Sin[2*(e + f*x)]) + 2*(Cos[e + f*x]^2)^(1/6)*Tan[e + f*x]))/(10*f*(Cos[e
 + f*x]^2)^(1/6))
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(2/3)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(2/3)*tan(f*x + e)^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(2/3)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(2/3)*tan(f*x + e)^2, x)
```

maple [F] time = 0.23, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\left(\tan^{2}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(2/3)*tan(f*x+e)^2,x)
```

```
[Out] int((d*sec(f*x+e))^(2/3)*tan(f*x+e)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(2/3)*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(2/3)*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{2/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(d/cos(e + f*x))^(2/3),x)
[Out] int(tan(e + f*x)^2*(d/cos(e + f*x))^(2/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d \sec{\left(e + f x \right)}\right)^{\frac{2}{3}} \tan^{2}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(2/3)*tan(f*x+e)**2,x)
[Out] Integral((d*sec(e + f*x))**(2/3)*tan(e + f*x)**2, x)
```

3.283 $\int \sqrt[3]{d\sec(e+fx)}\,\tan^2(e+fx)\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{5/3}\tan^3(e+fx)\sqrt[3]{d\sec(e+fx)}\;{}_2F_1\left(\frac{3}{2},\frac{5}{3};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

```
[Out] 1/3*(cos(f*x+e)^2)^(5/3)*hypergeom([3/2, 5/3],[5/2],sin(f*x+e)^2)*(d*sec(f*
x+e))^(1/3)*tan(f*x+e)^3/f
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{5/3}\tan^3(e+fx)\sqrt[3]{d\sec(e+fx)}\;{}_2F_1\left(\frac{3}{2},\frac{5}{3};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(1/3)*Tan[e + f*x]^2,x]
```

```
[Out] ((Cos[e + f*x]^2)^(5/3)*Hypergeometric2F1[3/2, 5/3, 5/2, Sin[e + f*x]^2]*(d
*Sec[e + f*x])^(1/3)*Tan[e + f*x]^3)/(3*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sqrt[3]{d\sec(e+fx)}\,\tan^2(e+fx)\,dx=\frac{\cos^2(e+fx)^{5/3}\;{}_2F_1\left(\frac{3}{2},\frac{5}{3};\frac{5}{2};\sin^2(e+fx)\right)\sqrt[3]{d\sec(e+fx)}\,\tan^3(e+fx)}{3f}$$

Mathematica [A] time = 0.28, size = 80, normalized size = 1.40

$$\frac{3\sqrt[3]{d\sec(e+fx)}\left(2\sqrt[3]{\cos^2(e+fx)}\,\tan(e+fx)-\sin(2(e+fx))\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{3}{2};\sin^2(e+fx)\right)\right)}{8f\sqrt[3]{\cos^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(1/3)*Tan[e + f*x]^2,x]
```

```
[Out] (3*(d*Sec[e + f*x])^(1/3)*(-(Hypergeometric2F1[1/2, 2/3, 3/2, Sin[e + f*x]^
2]*Sin[2*(e + f*x)]) + 2*(Cos[e + f*x]^2)^(1/3)*Tan[e + f*x]))/(8*f*(Cos[e
+ f*x]^2)^(1/3))
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/3)*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(1/3)*tan(f*x + e)^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/3)*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(1/3)*tan(f*x + e)^2, x)
```

maple [F] time = 0.23, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\left(\tan^{2}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/3)*tan(f*x+e)^2,x)
```

```
[Out] int((d*sec(f*x+e))^(1/3)*tan(f*x+e)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/3)*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(1/3)*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{1/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(d/cos(e + f*x))^(1/3),x)
[Out] int(tan(e + f*x)^2*(d/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt[3]{d \sec{\left(e + f x \right)}} \tan^{2}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/3)*tan(f*x+e)**2,x)
[Out] Integral((d*sec(e + f*x))**(1/3)*tan(e + f*x)**2, x)
```

3.284 $\int \frac{\tan^2(e+fx)}{\sqrt[3]{d\sec(e+fx)}}\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{4/3}\tan^3(e+fx)\,{}_2F_1\left(\frac{4}{3},\frac{3}{2};\frac{5}{2};\sin^2(e+fx)\right)}{3f\sqrt[3]{d\sec(e+fx)}}$$

```
[Out] 1/3*(cos(f*x+e)^2)^(4/3)*hypergeom([4/3, 3/2],[5/2],sin(f*x+e)^2)*tan(f*x+e
)^3/f/(d*sec(f*x+e))^(1/3)
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{4/3}\tan^3(e+fx)\,{}_2F_1\left(\frac{4}{3},\frac{3}{2};\frac{5}{2};\sin^2(e+fx)\right)}{3f\sqrt[3]{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]^2/(d*Sec[e + f*x])^(1/3),x]
```

```
[Out] ((Cos[e + f*x]^2)^(4/3)*Hypergeometric2F1[4/3, 3/2, 5/2, Sin[e + f*x]^2]*Ta
n[e + f*x]^3)/(3*f*(d*Sec[e + f*x])^(1/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\tan^2(e+fx)}{\sqrt[3]{d\sec(e+fx)}}\,dx=\frac{\cos^2(e+fx)^{4/3}\,{}_2F_1\left(\frac{4}{3},\frac{3}{2};\frac{5}{2};\sin^2(e+fx)\right)\tan^3(e+fx)}{3f\sqrt[3]{d\sec(e+fx)}}$$

Mathematica [A] time = 0.21, size = 80, normalized size = 1.40

$$\frac{3\left(2\cos^2(e+fx)^{2/3}\tan(e+fx)-\sin(2(e+fx))\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)\right)}{4f\cos^2(e+fx)^{2/3}\sqrt[3]{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]^2/(d*Sec[e + f*x])^(1/3),x]
```

```
[Out] (3*(-(Hypergeometric2F1[1/3, 1/2, 3/2, Sin[e + f*x]^2]*Sin[2*(e + f*x)]) +
2*(Cos[e + f*x]^2)^(2/3)*Tan[e + f*x]))/(4*f*(Cos[e + f*x]^2)^(2/3)*(d*Sec[
e + f*x])^(1/3))
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{2}}{d\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*sec(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(2/3)*tan(f*x + e)^2/(d*sec(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\tan\left(fx+e\right)^{2}}{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*sec(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^2/(d*sec(f*x + e))^(1/3), x)
```

maple [F] time = 0.21, size = 0, normalized size = 0.00

$$\int\frac{\tan^{2}\left(fx+e\right)}{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^2/(d*sec(f*x+e))^(1/3),x)
```

```
[Out] int(tan(f*x+e)^2/(d*sec(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\tan\left(fx+e\right)^{2}}{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*sec(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate(tan(f*x + e)^2/(d*sec(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^2}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2/(d/cos(e + f*x))^(1/3),x)
[Out] int(tan(e + f*x)^2/(d/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan^2\left(e+fx\right)}{\sqrt[3]{d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**2/(d*sec(f*x+e))**(1/3),x)
[Out] Integral(tan(e + f*x)**2/(d*sec(e + f*x))**(1/3), x)
```

3.285 $\int \frac{\tan^2(e+fx)}{(d\sec(e+fx))^{2/3}}\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{7/6}\tan^3(e+fx)\,{}_2F_1\left(\frac{7}{6},\frac{3}{2};\frac{5}{2};\sin^2(e+fx)\right)}{3f(d\sec(e+fx))^{2/3}}$$

```
[Out] 1/3*(cos(f*x+e)^2)^(7/6)*hypergeom([7/6, 3/2],[5/2],sin(f*x+e)^2)*tan(f*x+e
)^3/f/(d*sec(f*x+e))^(2/3)
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{7/6}\tan^3(e+fx)\,{}_2F_1\left(\frac{7}{6},\frac{3}{2};\frac{5}{2};\sin^2(e+fx)\right)}{3f(d\sec(e+fx))^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]^2/(d*Sec[e + f*x])^(2/3),x]
```

```
[Out] ((Cos[e + f*x]^2)^(7/6)*Hypergeometric2F1[7/6, 3/2, 5/2, Sin[e + f*x]^2]*Ta
n[e + f*x]^3)/(3*f*(d*Sec[e + f*x])^(2/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\tan^2(e+fx)}{(d\sec(e+fx))^{2/3}}\,dx = \frac{\cos^2(e+fx)^{7/6}\,{}_2F_1\left(\frac{7}{6},\frac{3}{2};\frac{5}{2};\sin^2(e+fx)\right)\tan^3(e+fx)}{3f(d\sec(e+fx))^{2/3}}$$

Mathematica [A] time = 0.20, size = 79, normalized size = 1.39

$$\frac{3\cos^2(e+fx)^{5/6}\tan(e+fx)-\frac{3}{2}\sin(2(e+fx))\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)}{f\cos^2(e+fx)^{5/6}(d\sec(e+fx))^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]^2/(d*Sec[e + f*x])^(2/3),x]
```

```
[Out] ((-3*Hypergeometric2F1[1/6, 1/2, 3/2, Sin[e + f*x]^2]*Sin[2*(e + f*x)])/2 +
 3*(Cos[e + f*x]^2)^(5/6)*Tan[e + f*x])/(f*(Cos[e + f*x]^2)^(5/6)*(d*Sec[e
+ f*x])^(2/3))
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{2}}{d\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*sec(f*x+e))^(2/3),x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(1/3)*tan(f*x + e)^2/(d*sec(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan\left(fx+e\right)^{2}}{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*sec(f*x+e))^(2/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^2/(d*sec(f*x + e))^(2/3), x)
```

maple [F] time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\tan^{2}\left(fx+e\right)}{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^2/(d*sec(f*x+e))^(2/3),x)
```

```
[Out] int(tan(f*x+e)^2/(d*sec(f*x+e))^(2/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan\left(fx+e\right)^{2}}{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^2/(d*sec(f*x+e))^(2/3),x, algorithm="maxima")
[Out] integrate(tan(f*x + e)^2/(d*sec(f*x + e))^(2/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^2}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{2/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2/(d/cos(e + f*x))^(2/3),x)
[Out] int(tan(e + f*x)^2/(d/cos(e + f*x))^(2/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan^{2}\left(e+fx\right)}{\left(d\sec\left(e+fx\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**2/(d*sec(f*x+e))**(2/3),x)
[Out] Integral(tan(e + f*x)**2/(d*sec(e + f*x))**(2/3), x)
```

3.286 $\int (d\sec(e+fx))^{4/3}\tan^4(e+fx)\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{19/6}\tan^5(e+fx)(d\sec(e+fx))^{4/3}\,{}_2F_1\left(\frac{5}{2},\frac{19}{6};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

```
[Out] 1/5*(cos(f*x+e)^2)^(19/6)*hypergeom([5/2, 19/6],[7/2],sin(f*x+e)^2)*(d*sec(
f*x+e))^(4/3)*tan(f*x+e)^5/f
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{19/6}\tan^5(e+fx)(d\sec(e+fx))^{4/3}\,{}_2F_1\left(\frac{5}{2},\frac{19}{6};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(4/3)*Tan[e + f*x]^4,x]
```

```
[Out] ((Cos[e + f*x]^2)^(19/6)*Hypergeometric2F1[5/2, 19/6, 7/2, Sin[e + f*x]^2]*
(d*Sec[e + f*x])^(4/3)*Tan[e + f*x]^5)/(5*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (d\sec(e+fx))^{4/3}\tan^4(e+fx)\,dx = \frac{\cos^2(e+fx)^{19/6}\,{}_2F_1\left(\frac{5}{2},\frac{19}{6};\frac{7}{2};\sin^2(e+fx)\right)(d\sec(e+fx))^{4/3}\tan^5(e+fx}{5f}$$

Mathematica [A] time = 1.11, size = 92, normalized size = 1.61

$$\frac{3d\sqrt[3]{d\sec(e+fx)}\left(-18\sin(e+fx)\sqrt[6]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)+27\sin(e+fx)+\tan(e+fx)\sec}{91f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(4/3)*Tan[e + f*x]^4,x]
```

```
[Out] (3*d*(d*Sec[e + f*x])^(1/3)*(27*Sin[e + f*x] - 18*(Cos[e + f*x]^2)^(1/6)*Hy
pergeometric2F1[1/6, 1/2, 3/2, Sin[e + f*x]^2]*Sin[e + f*x] + Sec[e + f*x]*
(-16 + 7*Sec[e + f*x]^2)*Tan[e + f*x]))/(91*f)
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}} d\sec\left(fx+e\right)\tan\left(fx+e\right)^{4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(4/3)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(1/3)*d*sec(f*x + e)*tan(f*x + e)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(fx+e\right)\right)^{\frac{4}{3}} \tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(4/3)*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(4/3)*tan(f*x + e)^4, x)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(fx+e\right)\right)^{\frac{4}{3}} \left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(4/3)*tan(f*x+e)^4,x)
```

```
[Out] int((d*sec(f*x+e))^(4/3)*tan(f*x+e)^4,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(4/3)*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{4/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(d/cos(e + f*x))^(4/3),x)
[Out] int(tan(e + f*x)^4*(d/cos(e + f*x))^(4/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d \sec{\left(e + f x \right)}\right)^{\frac{4}{3}} \tan^{4}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(4/3)*tan(f*x+e)**4,x)
[Out] Integral((d*sec(e + f*x))**(4/3)*tan(e + f*x)**4, x)
```

3.287 $\int (d\sec(e+fx))^{2/3}\tan^4(e+fx)\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{17/6}\tan^5(e+fx)(d\sec(e+fx))^{2/3}\,{}_2F_1\left(\frac{5}{2},\frac{17}{6};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

```
[Out] 1/5*(cos(f*x+e)^2)^(17/6)*hypergeom([5/2, 17/6],[7/2],sin(f*x+e)^2)*(d*sec(
f*x+e))^(2/3)*tan(f*x+e)^5/f
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{17/6}\tan^5(e+fx)(d\sec(e+fx))^{2/3}\,{}_2F_1\left(\frac{5}{2},\frac{17}{6};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(2/3)*Tan[e + f*x]^4,x]
```

```
[Out] ((Cos[e + f*x]^2)^(17/6)*Hypergeometric2F1[5/2, 17/6, 7/2, Sin[e + f*x]^2]*
(d*Sec[e + f*x])^(2/3)*Tan[e + f*x]^5)/(5*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
 !IntegerQ[(n - 1)/2] && !IntegerQ[m/2]
```

Rubi steps

$$\int (d\sec(e+fx))^{2/3}\tan^4(e+fx)\,dx=\frac{\cos^2(e+fx)^{17/6}\,{}_2F_1\left(\frac{5}{2},\frac{17}{6};\frac{7}{2};\sin^2(e+fx)\right)(d\sec(e+fx))^{2/3}\tan^5(e+fx)}{5f}$$

Mathematica [A] time = 0.16, size = 69, normalized size = 1.21

$$\frac{3\tan(e+fx)(d\sec(e+fx))^{2/3}\left(9\cos^2(e+fx)^{5/6}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{3}{2};\sin^2(e+fx)\right)+5\sec^2(e+fx)-14\right)}{55f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(2/3)*Tan[e + f*x]^4,x]
```

```
[Out] (3*(d*Sec[e + f*x])^(2/3)*(-14 + 9*(Cos[e + f*x]^2)^(5/6)*Hypergeometric2F1
[1/2, 5/6, 3/2, Sin[e + f*x]^2] + 5*Sec[e + f*x]^2)*Tan[e + f*x])/(55*f)
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(2/3)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(2/3)*tan(f*x + e)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(2/3)*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(2/3)*tan(f*x + e)^4, x)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(2/3)*tan(f*x+e)^4,x)
```

```
[Out] int((d*sec(f*x+e))^(2/3)*tan(f*x+e)^4,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(2/3)*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(2/3)*tan(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{2/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(d/cos(e + f*x))^(2/3),x)
[Out] int(tan(e + f*x)^4*(d/cos(e + f*x))^(2/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(e+fx\right)\right)^{\frac{2}{3}}\tan^4\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(2/3)*tan(f*x+e)**4,x)
[Out] Integral((d*sec(e + f*x))**(2/3)*tan(e + f*x)**4, x)
```

3.288 $\int \sqrt[3]{d\sec(e+fx)}\tan^4(e+fx)\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{8/3}\tan^5(e+fx)\sqrt[3]{d\sec(e+fx)}\ {}_2F_1\left(\frac{5}{2},\frac{8}{3};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

```
[Out] 1/5*(cos(f*x+e)^2)^(8/3)*hypergeom([5/2, 8/3],[7/2],sin(f*x+e)^2)*(d*sec(f*
x+e))^(1/3)*tan(f*x+e)^5/f
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{8/3}\tan^5(e+fx)\sqrt[3]{d\sec(e+fx)}\ {}_2F_1\left(\frac{5}{2},\frac{8}{3};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(1/3)*Tan[e + f*x]^4,x]
```

```
[Out] ((Cos[e + f*x]^2)^(8/3)*Hypergeometric2F1[5/2, 8/3, 7/2, Sin[e + f*x]^2]*(d
*Sec[e + f*x])^(1/3)*Tan[e + f*x]^5)/(5*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sqrt[3]{d\sec(e+fx)}\tan^4(e+fx)\,dx=\frac{\cos^2(e+fx)^{8/3}\ {}_2F_1\left(\frac{5}{2},\frac{8}{3};\frac{7}{2};\sin^2(e+fx)\right)\sqrt[3]{d\sec(e+fx)}\tan^5(e+fx)}{5f}$$

Mathematica [A] time = 0.15, size = 69, normalized size = 1.21

$$\frac{3\tan(e+fx)\sqrt[3]{d\sec(e+fx)}\left(9\cos^2(e+fx)^{2/3}\ {}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{3}{2};\sin^2(e+fx)\right)+4\sec^2(e+fx)-13\right)}{40f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(1/3)*Tan[e + f*x]^4,x]
```

```
[Out] (3*(d*Sec[e + f*x])^(1/3)*(-13 + 9*(Cos[e + f*x]^2)^(2/3)*Hypergeometric2F1
[1/2, 2/3, 3/2, Sin[e + f*x]^2] + 4*Sec[e + f*x]^2)*Tan[e + f*x])/(40*f)
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/3)*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(1/3)*tan(f*x + e)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/3)*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(1/3)*tan(f*x + e)^4, x)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/3)*tan(f*x+e)^4,x)
```

```
[Out] int((d*sec(f*x+e))^(1/3)*tan(f*x+e)^4,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/3)*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(1/3)*tan(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{1/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(d/cos(e + f*x))^(1/3),x)
[Out] int(tan(e + f*x)^4*(d/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt[3]{d \sec{\left(e + f x \right)}} \tan^{4}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/3)*tan(f*x+e)**4,x)
[Out] Integral((d*sec(e + f*x))**(1/3)*tan(e + f*x)**4, x)
```

3.289 $\int \frac{\tan^4(e+fx)}{\sqrt[3]{d\sec(e+fx)}}\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{7/3}\tan^5(e+fx)\,{}_2F_1\left(\frac{7}{3},\frac{5}{2};\frac{7}{2};\sin^2(e+fx)\right)}{5f\sqrt[3]{d\sec(e+fx)}}$$

```
[Out] 1/5*(cos(f*x+e)^2)^(7/3)*hypergeom([7/3, 5/2],[7/2],sin(f*x+e)^2)*tan(f*x+e
)^5/f/(d*sec(f*x+e))^(1/3)
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{7/3}\tan^5(e+fx)\,{}_2F_1\left(\frac{7}{3},\frac{5}{2};\frac{7}{2};\sin^2(e+fx)\right)}{5f\sqrt[3]{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]^4/(d*Sec[e + f*x])^(1/3),x]
```

```
[Out] ((Cos[e + f*x]^2)^(7/3)*Hypergeometric2F1[7/3, 5/2, 7/2, Sin[e + f*x]^2]*Ta
n[e + f*x]^5)/(5*f*(d*Sec[e + f*x])^(1/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\tan^4(e+fx)}{\sqrt[3]{d\sec(e+fx)}}\,dx = \frac{\cos^2(e+fx)^{7/3}\,{}_2F_1\left(\frac{7}{3},\frac{5}{2};\frac{7}{2};\sin^2(e+fx)\right)\tan^5(e+fx)}{5f\sqrt[3]{d\sec(e+fx)}}$$

Mathematica [A] time = 0.15, size = 69, normalized size = 1.21

$$\frac{3\tan(e+fx)\left(9\sqrt[3]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)+2\sec^2(e+fx)-11\right)}{16f\sqrt[3]{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]^4/(d*Sec[e + f*x])^(1/3),x]
```

```
[Out] (3*(-11 + 9*(Cos[e + f*x]^2)^(1/3)*Hypergeometric2F1[1/3, 1/2, 3/2, Sin[e +
 f*x]^2] + 2*Sec[e + f*x]^2)*Tan[e + f*x])/(16*f*(d*Sec[e + f*x])^(1/3))
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}\tan\left(fx+e\right)^{4}}{d\sec\left(fx+e\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/(d*sec(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(2/3)*tan(f*x + e)^4/(d*sec(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan\left(fx+e\right)^{4}}{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/(d*sec(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^4/(d*sec(f*x + e))^(1/3), x)
```

maple [F] time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{\tan^{4}\left(fx+e\right)}{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^4/(d*sec(f*x+e))^(1/3),x)
```

```
[Out] int(tan(f*x+e)^4/(d*sec(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan\left(fx+e\right)^{4}}{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/(d*sec(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate(tan(f*x + e)^4/(d*sec(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^4}{{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{1/3}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4/(d/cos(e + f*x))^(1/3),x)
[Out] int(tan(e + f*x)^4/(d/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan^{4}{\left(e + f x \right)}}{\sqrt[3]{d \sec{\left(e + f x \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**4/(d*sec(f*x+e))**(1/3),x)
[Out] Integral(tan(e + f*x)**4/(d*sec(e + f*x))**(1/3), x)
```

3.290 $\int \frac{\tan^4(e+fx)}{(d\sec(e+fx))^{2/3}}\,dx$

Optimal. Leaf size=57

$$\frac{\cos^2(e+fx)^{13/6}\tan^5(e+fx)\,{}_2F_1\left(\frac{13}{6},\frac{5}{2};\frac{7}{2};\sin^2(e+fx)\right)}{5f(d\sec(e+fx))^{2/3}}$$

```
[Out] 1/5*(cos(f*x+e)^2)^(13/6)*hypergeom([13/6, 5/2],[7/2],sin(f*x+e)^2)*tan(f*x
+e)^5/f/(d*sec(f*x+e))^(2/3)
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{\cos^2(e+fx)^{13/6}\tan^5(e+fx)\,{}_2F_1\left(\frac{13}{6},\frac{5}{2};\frac{7}{2};\sin^2(e+fx)\right)}{5f(d\sec(e+fx))^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Int[Tan[e + f*x]^4/(d*Sec[e + f*x])^(2/3),x]
```

```
[Out] ((Cos[e + f*x]^2)^(13/6)*Hypergeometric2F1[13/6, 5/2, 7/2, Sin[e + f*x]^2]*
Tan[e + f*x]^5)/(5*f*(d*Sec[e + f*x])^(2/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\tan^4(e+fx)}{(d\sec(e+fx))^{2/3}}\,dx=\frac{\cos^2(e+fx)^{13/6}\,{}_2F_1\left(\frac{13}{6},\frac{5}{2};\frac{7}{2};\sin^2(e+fx)\right)\tan^5(e+fx)}{5f(d\sec(e+fx))^{2/3}}$$

Mathematica [A] time = 0.14, size = 67, normalized size = 1.18

$$\frac{3\tan(e+fx)\left(9\sqrt[6]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{3}{2};\sin^2(e+fx)\right)+\sec^2(e+fx)-10\right)}{7f(d\sec(e+fx))^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Tan[e + f*x]^4/(d*Sec[e + f*x])^(2/3),x]
```

```
[Out] (3*(-10 + 9*(Cos[e + f*x]^2)^(1/6)*Hypergeometric2F1[1/6, 1/2, 3/2, Sin[e +
 f*x]^2] + Sec[e + f*x]^2)*Tan[e + f*x])/(7*f*(d*Sec[e + f*x])^(2/3))
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(d\sec\left(fx+e\right)\right)^{\frac{1}{3}}\tan\left(fx+e\right)^{4}}{d\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/(d*sec(f*x+e))^(2/3),x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e))^(1/3)*tan(f*x + e)^4/(d*sec(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan\left(fx+e\right)^{4}}{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/(d*sec(f*x+e))^(2/3),x, algorithm="giac")
```

```
[Out] integrate(tan(f*x + e)^4/(d*sec(f*x + e))^(2/3), x)
```

maple [F] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{\tan^{4}\left(fx+e\right)}{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(f*x+e)^4/(d*sec(f*x+e))^(2/3),x)
```

```
[Out] int(tan(f*x+e)^4/(d*sec(f*x+e))^(2/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan\left(fx+e\right)^{4}}{\left(d\sec\left(fx+e\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)^4/(d*sec(f*x+e))^(2/3),x, algorithm="maxima")
```

```
[Out] integrate(tan(f*x + e)^4/(d*sec(f*x + e))^(2/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\tan\left(e+f\,x\right)^4}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{2/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4/(d/cos(e + f*x))^(2/3),x)
```

```
[Out] int(tan(e + f*x)^4/(d/cos(e + f*x))^(2/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\tan^{4}\left(e+fx\right)}{\left(d\sec\left(e+fx\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(tan(f*x+e)**4/(d*sec(f*x+e))**(2/3),x)
```

```
[Out] Integral(tan(e + f*x)**4/(d*sec(e + f*x))**(2/3), x)
```

3.291 $\int (d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}\,dx$

Optimal. Leaf size=178

$$-\frac{\sqrt{b}\,d^3\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{\sqrt{b}\,d^3\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{d^2(b\tan(e+fx))^{3/2}\sqrt{d\,s}}{2bf}$$

```
[Out] -1/4*d^3*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*b^(1/2)*(b*tan(f*x+e))^(1/2)/
f/(d*sec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)+1/4*d^3*arctanh((b*sin(f*x+e))^
(1/2)/b^(1/2))*b^(1/2)*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^(1/2)/(b*sin(f
*x+e))^(1/2)+1/2*d^2*(d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2)/b/f
```

Rubi [A] time = 0.16, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2613, 2616, 2564, 329, 298, 203, 206}

$$\frac{d^2(b\tan(e+fx))^{3/2}\sqrt{d\sec(e+fx)}}{2bf}-\frac{\sqrt{b}\,d^3\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{\sqrt{b}\,d^3\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b}}{}\right)}{4f\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] -(Sqrt[b]*d^3*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(4
*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]]) + (Sqrt[b]*d^3*ArcTanh[Sqrt[b
*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(4*f*Sqrt[d*Sec[e + f*x]]*Sqr
t[b*Sin[e + f*x]]) + (d^2*Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3/2))/(2*b
*f)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int (d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}\,dx = \frac{d^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2bf} + \frac{1}{4}d^2\int \sqrt{d\sec(e+fx)}\,\sqrt{b\tan(e+$$

$$= \frac{d^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2bf} + \frac{\left(d^3\sqrt{b\tan(e+fx)}\right)\int \sec(e+fx}{4\sqrt{d\sec(e+fx)}\,\sqrt{b\sin}}$$

$$= \frac{d^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2bf} + \frac{\left(d^3\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{1-\frac{x}{b}}\right.}{4bf\sqrt{d\sec(e+fx)}\,\sqrt{b\,s}}$$

$$= \frac{d^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2bf} + \frac{\left(d^3\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{x^2}{1-\frac{x}{b}}\right.}{2bf\sqrt{d\sec(e+fx)}\,\sqrt{b}}$$

$$= \frac{d^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2bf} + \frac{\left(bd^3\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{b-}\right.}{4f\sqrt{d\sec(e+fx)}\,\sqrt{b}}$$

$$= -\frac{\sqrt{b}\,d^3\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{b\tan(e+fx)}}{4f\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}} + \frac{\sqrt{b}\,d^3\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right.}{4f\sqrt{d\sec(e+fx)}\,\sqrt{b}}$$

<u>Mathematica</u> [A] time = 1.92, size = 174, normalized size = 0.98

$$\frac{b(d\sec(e+fx))^{5/2}\left(4\sec^{\frac{5}{2}}(e+fx) - 4\sqrt{\sec(e+fx)} + 2\sqrt[4]{\tan^2(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right) + \sqrt[4]{\tan^2(e+fx)}\left(\text{lo}\right.\right.}{8f\sec^{\frac{5}{2}}(e+fx)\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (b*(d*Sec[e + f*x])^(5/2)*(-4*Sqrt[Sec[e + f*x]] + 4*Sec[e + f*x]^(5/2) + 2
*ArcTan[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)]*(Tan[e + f*x]^2)^(1/4) +
 (-Log[1 - Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)] + Log[1 + Sqrt[Sec[e
+ f*x]]/(Tan[e + f*x]^2)^(1/4)])*(Tan[e + f*x]^2)^(1/4)))/(8*f*Sec[e + f*x]
^(5/2)*Sqrt[b*Tan[e + f*x]])
```

fricas [B] time = 0.87, size = 788, normalized size = 4.43

$$\left[-\frac{2\sqrt{-bd}\, d^2 \arctan\left(\frac{\left(\cos(fx+e)^3 - 5\cos(fx+e)^2 - \left(\cos(fx+e)^2 + 6\cos(fx+e) + 4\right)\sin(fx+e) - 2\cos(fx+e) + 4\right)\sqrt{-bd}\sqrt{\frac{b\sin(fx+e)}{\cos(fx+e)}}\sqrt{\frac{d}{\cos(fx+e)}}}{4\left(bd\cos(fx+e)^2 - bd - \left(bd\cos(fx+e) + bd\right)\sin(fx+e)\right)}\right.}{} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/32*(2*sqrt(-b*d)*d^2*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 - (c
os(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt
(-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos(f*x
+ e)^2 - b*d - (b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e) - sqrt(
-b*d)*d^2*cos(f*x + e)*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^2 - 8*
(7*cos(f*x + e)^3 - (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(
f*x + e))*sqrt(-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))
 + 72*b*d + 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e)^4 -
 8*cos(f*x + e)^2 - 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) - 16*d^2*sqrt
(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x
 + e)), -1/32*(2*sqrt(b*d)*d^2*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^
2 + (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4
)*sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos
(f*x + e)^2 - b*d + (b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e) -
sqrt(b*d)*d^2*cos(f*x + e)*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^2
- 8*(7*cos(f*x + e)^3 + (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*
cos(f*x + e))*sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x +
e)) + 72*b*d - 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e)^
4 - 8*cos(f*x + e)^2 + 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) - 16*d^2*s
qrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*sin(f*x + e))/(f*cos(
f*x + e))]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}} \sqrt{b\tan\left(fx+e\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

[Out] integrate((d*sec(f*x + e))^(5/2)*sqrt(b*tan(f*x + e)), x)

maple [C] time = 0.92, size = 600, normalized size = 3.37

$$\frac{\left(i \left(\cos^{2}\left(f x+e\right)\right) \sqrt{\frac{i \cos\left(f x+e\right)-i+\sin\left(f x+e\right)}{\sin\left(f x+e\right)}}\, \sqrt{-\frac{i \cos\left(f x+e\right)-i-\sin\left(f x+e\right)}{\sin\left(f x+e\right)}}\, \sqrt{-\frac{i\left(-1+\cos\left(f x+e\right)\right)}{\sin\left(f x+e\right)}}\, \mathrm{EllipticPi}\left(\sqrt{\frac{i \cos\left(f x+e\right)-i+\sin(}{\sin\left(f x+e\right)}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x)

[Out] 1/8/f*(I*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*c os(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/ 2*2^(1/2))-I*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(- (I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2* I,1/2*2^(1/2))-cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)* (-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x +e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/ 2*I,1/2*2^(1/2))-cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f *x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+ 1/2*I,1/2*2^(1/2))+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))*cos(f*x+e)*(d/cos(f*x+e))^(5/2)*(b*sin(f*x+e)/cos(f*x+e))^(1/2)*sin(f*x+e)/(-1+cos(f*x+e))*2^(1/2)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d \sec\left(f x+e\right)\right)^{\frac{5}{2}} \sqrt{b \tan\left(f x+e\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/2),x, algorithm="maxima")

[Out] integrate((d*sec(f*x + e))^(5/2)*sqrt(b*tan(f*x + e)), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{b \tan\left(e+f x\right)} \left(\frac{d}{\cos\left(e+f x\right)}\right)^{5/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(5/2),x)
```

```
[Out] int((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(5/2)*(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.292 $\int (d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}\,dx$

Optimal. Leaf size=93

$$\frac{d^2(b\tan(e+fx))^{3/2}}{bf\sqrt{d\sec(e+fx)}}-\frac{d^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}$$

```
[Out] d^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticE
(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^(
1/2)/sin(f*x+e)^(1/2)+d^2*(b*tan(f*x+e))^(3/2)/b/f/(d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2613, 2616, 2640, 2639}

$$\frac{d^2(b\tan(e+fx))^{3/2}}{bf\sqrt{d\sec(e+fx)}}-\frac{d^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] -((d^2*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(f*Sqrt[d*Sec
[e + f*x]]*Sqrt[Sin[e + f*x]])) + (d^2*(b*Tan[e + f*x])^(3/2))/(b*f*Sqrt[d*
Sec[e + f*x]])
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\begin{aligned}\int (d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}\,dx &= \frac{d^2(b\tan(e+fx))^{3/2}}{bf\sqrt{d\sec(e+fx)}}-\frac{1}{2}d^2\int\frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx\\ &= \frac{d^2(b\tan(e+fx))^{3/2}}{bf\sqrt{d\sec(e+fx)}}-\frac{\left(d^2\sqrt{b\tan(e+fx)}\right)\int\sqrt{b\sin(e+fx)}\,dx}{2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}\\ &= \frac{d^2(b\tan(e+fx))^{3/2}}{bf\sqrt{d\sec(e+fx)}}-\frac{\left(d^2\sqrt{b\tan(e+fx)}\right)\int\sqrt{\sin(e+fx)}\,dx}{2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}\\ &= -\frac{d^2E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}+\frac{d^2(b\tan(e+fx))^{3/2}}{bf\sqrt{d\sec(e+fx)}}\end{aligned}$$

Mathematica [C] time = 1.00, size = 71, normalized size = 0.76

$$\frac{d\sin(e+fx)\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}\left(1-\frac{{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)}{\left(-\tan^2(e+fx)\right)^{3/4}}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (d*Sqrt[d*Sec[e + f*x]]*Sin[e + f*x]*Sqrt[b*Tan[e + f*x]]*(1 - Hypergeometr
ic2F1[-1/4, 1/4, 3/4, Sec[e + f*x]^2]/(-Tan[e + f*x]^2)^(3/4)))/f
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,d\sec\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*d*sec(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}\sqrt{b\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)*sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.90, size = 572, normalized size = 6.15

$$\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\cos\left(fx+e\right)\left(2\left(\cos^{2}\left(fx+e\right)\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \mathrm{Elliptic}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(b*sin(f*x+e)/cos(f*x+e))^(1/2)*(d/cos(f*x+e))^(3/2)*cos(f*x+e)*(2*co
s(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I
-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f
*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-cos(f*x+e)^
2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+
e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1
/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*cos(f*x+e)*((I*cos
(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f
*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2
^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-cos(f*x+e)*((I*cos(f*x+e)-I+s
in(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2
)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I
*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-cos(f*x+e)*2^(1/2)+2^(1/2))/sin(f*x+e)*2
^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}\sqrt{b\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((d*sec(f*x + e))^(3/2)*sqrt(b*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{b\tan\left(e+f\,x\right)}\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(3/2),x)
[Out] int((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \tan{\left(e + f x \right)}} \left(d \sec{\left(e + f x \right)}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(3/2)*(b*tan(f*x+e))**(1/2),x)
[Out] Integral(sqrt(b*tan(e + f*x))*(d*sec(e + f*x))**(3/2), x)
```

3.293 $\int \sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}\,dx$

Optimal. Leaf size=132

$$\frac{\sqrt{b}\,d\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{\sqrt{b}\,d\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}$$

```
[Out] -d*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*b^(1/2)*(b*tan(f*x+e))^(1/2)/f/(d*s
ec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)+d*arctanh((b*sin(f*x+e))^(1/2)/b^(1/2
))*b^(1/2)*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {2616, 2564, 329, 298, 203, 206}

$$\frac{\sqrt{b}\,d\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{\sqrt{b}\,d\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] -((Sqrt[b]*d*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(f*
Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])) + (Sqrt[b]*d*ArcTanh[Sqrt[b*Sin
[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Si
n[e + f*x]])
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
```

```
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}\,dx = \frac{\left(d\sqrt{b\tan(e+fx)}\right)\int \sec(e+fx)\sqrt{b\sin(e+fx)}\,dx}{\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= \frac{\left(d\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{1-\frac{x^2}{b^2}}\,dx, x, b\sin(e+fx)\right)}{bf\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= \frac{\left(2d\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{x^2}{1-\frac{x^4}{b^2}}\,dx, x, \sqrt{b\sin(e+fx)}\right)}{bf\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= \frac{\left(bd\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{b-x^2}\,dx, x, \sqrt{b\sin(e+fx)}\right)}{f\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} - \frac{\left(bd\sqrt{b\tan(e\right.}{f}$$

$$= -\frac{\sqrt{b}\,d\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{b\tan(e+fx)}}{f\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} + \frac{\sqrt{b}\,d\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{}}{f\sqrt{d\sec(e+fx)}\sqrt{b\sin}}$$

Mathematica [A] time = 0.73, size = 136, normalized size = 1.03

$$\frac{b\sqrt[4]{\tan^2(e+fx)}\sqrt{d\sec(e+fx)}\left(2\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)-\log\left(1-\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)+\log\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}+1\right)\right)}{2f\sqrt{\sec(e+fx)}\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (b*(2*ArcTan[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)] - Log[1 - Sqrt[Sec[
e + f*x]]/(Tan[e + f*x]^2)^(1/4)] + Log[1 + Sqrt[Sec[e + f*x]]/(Tan[e + f*x
]^2)^(1/4)])*Sqrt[d*Sec[e + f*x]]*(Tan[e + f*x]^2)^(1/4))/(2*f*Sqrt[Sec[e +
 f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [B] time = 0.80, size = 654, normalized size = 4.95

$$\left[-\frac{2\sqrt{-bd}\arctan\left(\frac{\left(\cos\left(fx+e\right)^{3}-5\cos\left(fx+e\right)^{2}-\left(\cos\left(fx+e\right)^{2}+6\cos\left(fx+e\right)+4\right)\sin\left(fx+e\right)-2\cos\left(fx+e\right)+4\right)\sqrt{-bd}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{4\left(bd\cos\left(fx+e\right)^{2}-bd-\left(bd\cos\left(fx+e\right)+bd\right)\sin\left(fx+e\right)\right)}\right)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(2*sqrt(-b*d)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 - (cos(f*
x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(-b*d
)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos(f*x + e)^
2 - b*d - (b*d*cos(f*x + e) + b*d)*sin(f*x + e))) - sqrt(-b*d)*log((b*d*cos
(f*x + e)^4 - 72*b*d*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 - (cos(f*x + e)^3
 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(-b*d)*sqrt(b*sin(f*x
 + e)/cos(f*x + e))*sqrt(d/cos(f*x + e)) + 72*b*d + 28*(b*d*cos(f*x + e)^2
- 2*b*d)*sin(f*x + e))/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 - 4*(cos(f*x + e)
^2 - 2)*sin(f*x + e) + 8)))/f, -1/8*(2*sqrt(b*d)*arctan(1/4*(cos(f*x + e)^3
 - 5*cos(f*x + e)^2 + (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) -
2*cos(f*x + e) + 4)*sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(
f*x + e))/(b*d*cos(f*x + e)^2 - b*d + (b*d*cos(f*x + e) + b*d)*sin(f*x + e)
)) - sqrt(b*d)*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^2 - 8*(7*cos(f
*x + e)^3 + (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e)
)*sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e)) + 72*b*d
 - 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e)^4 - 8*cos(f*
x + e)^2 + 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)))/f]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.67, size = 302, normalized size = 2.29

$$-\frac{\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{d}{\cos\left(fx+e\right)}}\,\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}\,\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\cos}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/2/f*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*(d/cos(f*x+e))^(1/2)*(b*sin(f*
x+e)/cos(f*x+e))^(1/2)*sin(f*x+e)*2^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(
f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*cos(f*x+e)*(I
*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^
(1/2))-I*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*
I,1/2*2^(1/2))+EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/
2+1/2*I,1/2*2^(1/2))+EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1
/2),1/2-1/2*I,1/2*2^(1/2)))/(-1+cos(f*x+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{b\tan\left(e+f\,x\right)}\,\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(1/2),x)
```

```
[Out] int((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b\tan\left(e+fx\right)}\sqrt{d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/2)*(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(b*tan(e + f*x))*sqrt(d*sec(e + f*x)), x)
```

3.294 $\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx$

Optimal. Leaf size=55

$$\frac{2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}$$

```
[Out] -2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticE(
cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^(1
/2)/sin(f*x+e)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2616, 2640, 2639}

$$\frac{2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/Sqrt[d*Sec[e + f*x]],x]
```

```
[Out] (2*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(f*Sqrt[d*Sec[e +
 f*x]]*Sqrt[Sin[e + f*x]])
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx &= \frac{\sqrt{b\tan(e+fx)}\int \sqrt{b\sin(e+fx)}\,dx}{\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}\\ &= \frac{\sqrt{b\tan(e+fx)}\int \sqrt{\sin(e+fx)}\,dx}{\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}\\ &= \frac{2E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.52, size = 62, normalized size = 1.13

$$-\frac{2b\sqrt[4]{-\tan^2(e+fx)}\;{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)}{f\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/Sqrt[d*Sec[e + f*x]],x]
```

```
[Out] (-2*b*Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e + f*x]^2]*(-Tan[e + f*x]^2)^(
1/4))/(f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{d\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(d*sec(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\sqrt{d\sec\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/sqrt(d*sec(f*x + e)), x)
```

maple [C] time = 0.70, size = 551, normalized size = 10.02

$$-\frac{\left(2\cos\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticE}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i(-1+c}{\sin}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(2*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(
f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e
))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-cos
(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-si
n(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+
e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*(-I*(-1+cos(
f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-
(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+si
n(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1
/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*
x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^
(1/2),1/2*2^(1/2))+cos(f*x+e)*2^(1/2)-2^(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(1
/2)/(d/cos(f*x+e))^(1/2)/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\sqrt{d\sec\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/sqrt(d*sec(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{b\tan\left(e+f\,x\right)}}{\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(1/2),x)
[Out] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(e+fx\right)}}{\sqrt{d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(d*sec(f*x+e))**(1/2),x)
[Out] Integral(sqrt(b*tan(e + f*x))/sqrt(d*sec(e + f*x)), x)
```

3.295 $\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=34

$$\frac{2(b\tan(e+fx))^{3/2}}{3bf(d\sec(e+fx))^{3/2}}$$

```
[Out] 2/3*(b*tan(f*x+e))^(3/2)/b/f/(d*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2605}

$$\frac{2(b\tan(e+fx))^{3/2}}{3bf(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*(b*Tan[e + f*x])^(3/2))/(3*b*f*(d*Sec[e + f*x])^(3/2))
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rubi steps

$$\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{3/2}}\,dx = \frac{2(b\tan(e+fx))^{3/2}}{3bf(d\sec(e+fx))^{3/2}}$$

Mathematica [A] time = 0.12, size = 34, normalized size = 1.00

$$\frac{2(b\tan(e+fx))^{3/2}}{3bf(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*(b*Tan[e + f*x])^(3/2))/(3*b*f*(d*Sec[e + f*x])^(3/2))
```

fricas [A] time = 0.55, size = 50, normalized size = 1.47

$$\frac{2\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)}{3\,d^2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e)/(d^2*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(3/2), x)
```

maple [A] time = 0.67, size = 50, normalized size = 1.47

$$\frac{2\sin\left(fx+e\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}{3f\cos\left(fx+e\right)\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(3/2),x)
```

```
[Out] 2/3/f*sin(f*x+e)*(b*sin(f*x+e)/cos(f*x+e))^(1/2)/cos(f*x+e)/(d/cos(f*x+e))^
(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(3/2), x)
```

mupad [B] time = 3.48, size = 55, normalized size = 1.62

$$\frac{\sin\left(2\,e+2\,f\,x\right)\,\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{3\,d^2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(3/2),x)
```

```
[Out] (sin(2*e + 2*f*x)*(d/cos(e + f*x))^(1/2)*((b*sin(2*e + 2*f*x))/(cos(2*e + 2
*f*x) + 1))^(1/2))/(3*d^2*f)
```

sympy [A] time = 26.00, size = 53, normalized size = 1.56

$$\begin{cases} \frac{2\sqrt{b}\,\tan^{\frac{3}{2}}\left(e+fx\right)}{3d^{\frac{3}{2}}f\sec^{\frac{3}{2}}\left(e+fx\right)} & \text{for}\ f\neq 0 \\ \frac{x\sqrt{b\tan\left(e\right)}}{\left(d\sec\left(e\right)\right)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(d*sec(f*x+e))**(3/2),x)
```

```
[Out] Piecewise((2*sqrt(b)*tan(e + f*x)**(3/2)/(3*d**(3/2)*f*sec(e + f*x)**(3/2))
, Ne(f, 0)), (x*sqrt(b*tan(e))/(d*sec(e))**(3/2), True))
```

3.296 $\int \frac{\sqrt{b \tan(e+fx)}}{(d \sec(e+fx))^{5/2}} \, dx$

Optimal. Leaf size=95

$$\frac{4E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5d^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{2(b\tan(e+fx))^{3/2}}{5bf(d\sec(e+fx))^{5/2}}$$

```
[Out] -4/5*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Elliptic
E(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/d^2/f/(d*sec(f*x+
e))^(1/2)/sin(f*x+e)^(1/2)+2/5*(b*tan(f*x+e))^(3/2)/b/f/(d*sec(f*x+e))^(5/2
)
```

Rubi [A] time = 0.11, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2612, 2616, 2640, 2639}

$$\frac{4E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5d^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{2(b\tan(e+fx))^{3/2}}{5bf(d\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(5/2),x]
```

```
[Out] (4*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(5*d^2*f*Sqrt[d*S
ec[e + f*x]]*Sqrt[Sin[e + f*x]]) + (2*(b*Tan[e + f*x])^(3/2))/(5*b*f*(d*Sec
[e + f*x])^(5/2))
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{5/2}}\,dx &= \frac{2(b\tan(e+fx))^{3/2}}{5bf(d\sec(e+fx))^{5/2}}+\frac{2\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx}{5d^2}\\
&= \frac{2(b\tan(e+fx))^{3/2}}{5bf(d\sec(e+fx))^{5/2}}+\frac{\left(2\sqrt{b\tan(e+fx)}\right)\int \sqrt{b\sin(e+fx)}\,dx}{5d^2\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}}\\
&= \frac{2(b\tan(e+fx))^{3/2}}{5bf(d\sec(e+fx))^{5/2}}+\frac{\left(2\sqrt{b\tan(e+fx)}\right)\int \sqrt{\sin(e+fx)}\,dx}{5d^2\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}\\
&= \frac{4E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5d^2f\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}+\frac{2(b\tan(e+fx))^{3/2}}{5bf(d\sec(e+fx))^{5/2}}
\end{aligned}
$$

Mathematica [C] time = 0.68, size = 79, normalized size = 0.83

$$
-\frac{b\left(4\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)+\cos(2(e+fx))-1\right)}{5d^2f\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(5/2),x]
```

```
[Out] -1/5*(b*(-1 + Cos[2*(e + f*x)] + 4*Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e
+ f*x]^2]*(-Tan[e + f*x]^2)^(1/4)))/(d^2*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[
e + f*x]])
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$
\operatorname{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}}{d^3\sec\left(fx+e\right)^3},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(5/2),x, algorithm="fricas")
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(d^3*sec(f*x + e)^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(5/2),x, algorithm="giac")
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(5/2), x)
```

maple [C] time = 0.78, size = 571, normalized size = 6.01

$$-\frac{\left(4\cos\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\;\mathrm{EllipticE}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i(-1}{s}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(5/2),x)
[Out] -1/5/f*(4*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*co
s(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x
+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2
*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-
I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(
f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+cos(f*x+e)
^3*2^(1/2)+4*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x
+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*Elli
pticE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-2*(-I*(-1
+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/
2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)
-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))+cos(f*x+e)*2^(1/2)-2*2^(1/2))
*(b*sin(f*x+e)/cos(f*x+e))^(1/2)/(d/cos(f*x+e))^(5/2)/cos(f*x+e)^2/sin(f*x+
e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(5/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{b\tan\left(e+f\,x\right)}}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(5/2),x)
[Out] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(e+fx\right)}}{\left(d\sec\left(e+fx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(d*sec(f*x+e))**(5/2),x)
[Out] Integral(sqrt(b*tan(e + f*x))/(d*sec(e + f*x))**(5/2), x)
```

3.297 $\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=72

$$\frac{8(b\tan(e+fx))^{3/2}}{21bd^2f(d\sec(e+fx))^{3/2}}+\frac{2(b\tan(e+fx))^{3/2}}{7bf(d\sec(e+fx))^{7/2}}$$

```
[Out] 2/7*(b*tan(f*x+e))^(3/2)/b/f/(d*sec(f*x+e))^(7/2)+8/21*(b*tan(f*x+e))^(3/2)
/b/d^2/f/(d*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2612, 2605}

$$\frac{8(b\tan(e+fx))^{3/2}}{21bd^2f(d\sec(e+fx))^{3/2}}+\frac{2(b\tan(e+fx))^{3/2}}{7bf(d\sec(e+fx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(7/2),x]
```

```
[Out] (2*(b*Tan[e + f*x])^(3/2))/(7*b*f*(d*Sec[e + f*x])^(7/2)) + (8*(b*Tan[e + f
*x])^(3/2))/(21*b*d^2*f*(d*Sec[e + f*x])^(3/2))
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{7/2}}\,dx = \frac{2(b\tan(e+fx))^{3/2}}{7bf(d\sec(e+fx))^{7/2}} + \frac{4\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{3/2}}\,dx}{7d^2}$$
$$= \frac{2(b\tan(e+fx))^{3/2}}{7bf(d\sec(e+fx))^{7/2}} + \frac{8(b\tan(e+fx))^{3/2}}{21bd^2f(d\sec(e+fx))^{3/2}}$$

Mathematica [A] time = 0.17, size = 53, normalized size = 0.74

$$\frac{(19\sin(e+fx)+3\sin(3(e+fx)))\sqrt{b\tan(e+fx)}}{42d^3f\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(7/2),x]
```

```
[Out] ((19*Sin[e + f*x] + 3*Sin[3*(e + f*x)])*Sqrt[b*Tan[e + f*x]])/(42*d^3*f*Sqr
t[d*Sec[e + f*x]])
```

fricas [A] time = 0.62, size = 63, normalized size = 0.88

$$\frac{2\left(3\cos\left(fx+e\right)^3+4\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)}{21\,d^4f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(7/2),x, algorithm="fricas")
```

```
[Out] 2/21*(3*cos(f*x + e)^3 + 4*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*
sqrt(d/cos(f*x + e))*sin(f*x + e)/(d^4*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(7/2), x)
```

maple [A] time = 0.68, size = 62, normalized size = 0.86

$$\frac{2\left(3\left(\cos^{2}\left(fx+e\right)\right)+4\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)}{21f\cos\left(fx+e\right)^{3}\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(7/2),x)
```

```
[Out] 2/21/f*(3*cos(f*x+e)^2+4)*(b*sin(f*x+e)/cos(f*x+e))^(1/2)*sin(f*x+e)/cos(f*
x+e)^3/(d/cos(f*x+e))^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(7/2), x)
```

mupad [B] time = 3.35, size = 69, normalized size = 0.96

$$\frac{\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\ \left(22\,\sin\left(2\,e+2\,f\,x\right)+3\,\sin\left(4\,e+4\,f\,x\right)\right)\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{84\,d^{4}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(7/2),x)
```

```
[Out] ((d/cos(e + f*x))^(1/2)*(22*sin(2*e + 2*f*x) + 3*sin(4*e + 4*f*x))*((b*sin(
2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(84*d^4*f)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(d*sec(f*x+e))**(7/2),x)
```

```
[Out] Timed out
```

3.298 $\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=132

$$\frac{8E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{15d^4f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{4(b\tan(e+fx))^{3/2}}{15bd^2f(d\sec(e+fx))^{5/2}}+\frac{2(b\tan(e+fx))^{3/2}}{9bf(d\sec(e+fx))^{9/2}}$$

```
[Out] -8/15*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Ellipti
cE(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/d^4/f/(d*sec(f*x
+e))^(1/2)/sin(f*x+e)^(1/2)+2/9*(b*tan(f*x+e))^(3/2)/b/f/(d*sec(f*x+e))^(9/
2)+4/15*(b*tan(f*x+e))^(3/2)/b/d^2/f/(d*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.17, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2612, 2616, 2640, 2639}

$$\frac{4(b\tan(e+fx))^{3/2}}{15bd^2f(d\sec(e+fx))^{5/2}}+\frac{8E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{15d^4f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{2(b\tan(e+fx))^{3/2}}{9bf(d\sec(e+fx))^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(9/2),x]
```

```
[Out] (8*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(15*d^4*f*Sqrt[d*
Sec[e + f*x]]*Sqrt[Sin[e + f*x]]) + (2*(b*Tan[e + f*x])^(3/2))/(9*b*f*(d*Se
c[e + f*x])^(9/2)) + (4*(b*Tan[e + f*x])^(3/2))/(15*b*d^2*f*(d*Sec[e + f*x]
)^(5/2))
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{9/2}}\,dx = \frac{2(b\tan(e+fx))^{3/2}}{9bf(d\sec(e+fx))^{9/2}} + \frac{2\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{5/2}}\,dx}{3d^2}$$

$$= \frac{2(b\tan(e+fx))^{3/2}}{9bf(d\sec(e+fx))^{9/2}} + \frac{4(b\tan(e+fx))^{3/2}}{15bd^2f(d\sec(e+fx))^{5/2}} + \frac{4\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx}{15d^4}$$

$$= \frac{2(b\tan(e+fx))^{3/2}}{9bf(d\sec(e+fx))^{9/2}} + \frac{4(b\tan(e+fx))^{3/2}}{15bd^2f(d\sec(e+fx))^{5/2}} + \frac{\left(4\sqrt{b\tan(e+fx)}\right)\int \sqrt{b\sin(e+}}{15d^4\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+}}$$

$$= \frac{2(b\tan(e+fx))^{3/2}}{9bf(d\sec(e+fx))^{9/2}} + \frac{4(b\tan(e+fx))^{3/2}}{15bd^2f(d\sec(e+fx))^{5/2}} + \frac{\left(4\sqrt{b\tan(e+fx)}\right)\int \sqrt{\sin(e+f}}{15d^4\sqrt{d\sec(e+fx)}\sqrt{\sin(e+}}$$

$$= \frac{8E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{15d^4f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} + \frac{2(b\tan(e+fx))^{3/2}}{9bf(d\sec(e+fx))^{9/2}} + \frac{4(b\tan(e+fx))}{15bd^2f(d\sec(e+f}$$

Mathematica [C] time = 0.97, size = 92, normalized size = 0.70

$$\frac{b\sin^2(e+fx)(5\cos(2(e+fx))+17) - 24b\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)}{45d^4f\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Tan[e + f*x]]/(d*Sec[e + f*x])^(9/2),x]
```

```
[Out] (b*(17 + 5*Cos[2*(e + f*x)])*Sin[e + f*x]^2 - 24*b*Hypergeometric2F1[-1/4,
1/4, 3/4, Sec[e + f*x]^2]*(-Tan[e + f*x]^2)^(1/4))/(45*d^4*f*Sqrt[d*Sec[e +
 f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{d^5\sec\left(fx+e\right)^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(9/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(d^5*sec(f*x + e)^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(9/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(9/2), x)
```

maple [C] time = 0.71, size = 585, normalized size = 4.43

$$-\frac{\left(5\sqrt{2}\,\left(\cos^5\left(fx+e\right)\right)-12\cos\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\text{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-}{\sin(f}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(9/2),x)
```

```
[Out] -1/45/f*(5*2^(1/2)*cos(f*x+e)^5-12*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/
sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF
(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*
x+e))/sin(f*x+e))^(1/2)+24*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+
e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos
(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/si
n(f*x+e))^(1/2)+cos(f*x+e)^3*2^(1/2)-12*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/
2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x
+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(
```

```
1/2),1/2*2^(1/2))+24*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I
+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1
/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))+6
*cos(f*x+e)*2^(1/2)-12*2^(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(1/2)/(d/cos(f*x+
e))^(9/2)/cos(f*x+e)^4/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\tan\left(fx+e\right)}}{\left(d\sec\left(fx+e\right)\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(1/2)/(d*sec(f*x+e))^(9/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*tan(f*x + e))/(d*sec(f*x + e))^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{b\tan\left(e+f\,x\right)}}{{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(9/2),x)
[Out] int((b*tan(e + f*x))^(1/2)/(d/cos(e + f*x))^(9/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(1/2)/(d*sec(f*x+e))**(9/2),x)
[Out] Timed out
```

3.299 $\int (d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=131

$$-\frac{b^2d^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{6f\sqrt{b\tan(e+fx)}}-\frac{bd^2\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}}{6f}+\frac{b\sqrt{b\tan(e+fx)}\,(}{3}$$

```
[Out] 1/6*b^2*d^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*E
llipticF(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)
^(1/2)/f/(b*tan(f*x+e))^(1/2)+1/3*b*(d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(1/
2)/f-1/6*b*d^2*(d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.18, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2611, 2613, 2616, 2642, 2641}

$$-\frac{b^2d^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{6f\sqrt{b\tan(e+fx)}}-\frac{bd^2\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}}{6f}+\frac{b\sqrt{b\tan(e+fx)}\,(}{3}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] -(b^2*d^2*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e
+ f*x]])/(6*f*Sqrt[b*Tan[e + f*x]]) - (b*d^2*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Ta
n[e + f*x]])/(6*f) + (b*(d*Sec[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]])/(3*f)
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\int (d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}\,dx = \frac{b(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}{3f} - \frac{1}{6}b^2\int \frac{(d\sec(e+fx))^{5/2}}{\sqrt{b\tan(e+fx)}}\,dx$$

$$= -\frac{bd^2\sqrt{d\sec(e+fx)}\,\sqrt{b\tan(e+fx)}}{6f} + \frac{b(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+}}{3f}$$

$$= -\frac{bd^2\sqrt{d\sec(e+fx)}\,\sqrt{b\tan(e+fx)}}{6f} + \frac{b(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+}}{3f}$$

$$= -\frac{bd^2\sqrt{d\sec(e+fx)}\,\sqrt{b\tan(e+fx)}}{6f} + \frac{b(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+}}{3f}$$

$$= -\frac{b^2d^2F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}{6f\sqrt{b\tan(e+fx)}} - \frac{bd^2\sqrt{d\,\mathrm{se}}}{}$$

Mathematica [C] time = 0.78, size = 95, normalized size = 0.73

$$\frac{bd^2\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}\,\left({}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\sec^2(e+fx)\right)+\sqrt[4]{-\tan^2(e+fx)}\,\left(2\sec^2(e+fx)-1\right)\right)}{6f\sqrt[4]{-\tan^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (b*d^2*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]]*(Hypergeometric2F1[1/4, 3/
4, 5/4, Sec[e + f*x]^2] + (-1 + 2*Sec[e + f*x]^2)*(-Tan[e + f*x]^2)^(1/4)))
/(6*f*(-Tan[e + f*x]^2)^(1/4))
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,bd^2\sec\left(fx+e\right)^2\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b*d^2*sec(f*x + e)^2*tan
(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(5/2)*(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.73, size = 239, normalized size = 1.82

$$\frac{\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\cos\left(fx+e\right)\left(i\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\left(\cos^{3}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\cdots}\right.}{12f\left(\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/12/f*(b*sin(f*x+e)/cos(f*x+e))^(3/2)*(d/cos(f*x+e))^(5/2)*cos(f*x+e)*(I*(
-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*cos(f*x+e)^3*sin(f*x+e)*((I*cos(f*x+e)
-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^
(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))
-cos(f*x+e)^3*2^(1/2)+cos(f*x+e)^2*2^(1/2)+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))/
(-1+cos(f*x+e))/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\sec(fx+e))^{\frac{5}{2}}(b\tan(fx+e))^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((d*sec(f*x + e))^(5/2)*(b*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (b\tan(e+f\,x))^{3/2}\left(\frac{d}{\cos(e+f\,x)}\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(5/2),x)
[Out] int((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(5/2)*(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.300 $\int (d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=169

$$-\frac{b^{3/2}d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\tan(e+fx)}}-\frac{b^{3/2}d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\tan(e+fx)}}$$

```
[Out] -1/4*b^(3/2)*d*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*(d*sec(f*x+e))^(1/2)*(b
*sin(f*x+e))^(1/2)/f/(b*tan(f*x+e))^(1/2)-1/4*b^(3/2)*d*arctanh((b*sin(f*x+
e))^(1/2)/b^(1/2))*(d*sec(f*x+e))^(1/2)*(b*sin(f*x+e))^(1/2)/f/(b*tan(f*x+e
))^(1/2)+1/2*b*(d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.17, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2611, 2616, 2564, 329, 212, 206, 203}

$$-\frac{b^{3/2}d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\tan(e+fx)}}-\frac{b^{3/2}d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] -(b^(3/2)*d*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[d*Sec[e + f*x]]*Sqrt[
b*Sin[e + f*x]])/(4*f*Sqrt[b*Tan[e + f*x]]) - (b^(3/2)*d*ArcTanh[Sqrt[b*Sin
[e + f*x]]/Sqrt[b]]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])/(4*f*Sqrt[b*
Tan[e + f*x]]) + (b*(d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]])/(2*f)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
```

```
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int (d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}\,dx = \frac{b(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2f} - \frac{1}{4}b^2\int \frac{(d\sec(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx$$

$$= \frac{b(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2f} - \frac{\left(b^2d\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+f\ldots}{4\sqrt{b\tan(e+f\ldots}$$

$$= \frac{b(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2f} - \frac{\left(bd\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx\ldots}{4f\sqrt{\ldots}}$$

$$= \frac{b(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2f} - \frac{\left(bd\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx\ldots}{2f\sqrt{b\ldots}}$$

$$= \frac{b(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2f} - \frac{\left(b^2d\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+f\ldots}{4f\sqrt{b\ldots}}$$

$$= -\frac{b^{3/2}d\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}}{4f\sqrt{b\tan(e+fx)}} - \frac{b^{3/2}d\tanh\ldots}{\ldots}$$

Mathematica [A] time = 6.36, size = 129, normalized size = 0.76

$$\frac{b\sqrt{b\tan(e+fx)}\,(d\sec(e+fx))^{3/2}\left(2\sqrt[4]{\tan^2(e+fx)}\,\sec^{\frac{3}{2}}(e+fx)+\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)-\tanh^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)\right)}{4f\sqrt[4]{\tan^2(e+fx)}\,\sec^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (b*(d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]]*(ArcTan[Sqrt[Sec[e + f*x]]/(
Tan[e + f*x]^2)^(1/4)] - ArcTanh[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)]
 + 2*Sec[e + f*x]^(3/2)*(Tan[e + f*x]^2)^(1/4)))/(4*f*Sec[e + f*x]^(3/2)*(T
an[e + f*x]^2)^(1/4))
```

fricas [B] time = 0.82, size = 769, normalized size = 4.55

$$\left[\frac{2\sqrt{-bd}\,bd\arctan\left(\frac{\left(\cos\left(fx+e\right)^{3}-5\cos\left(fx+e\right)^{2}-\left(\cos\left(fx+e\right)^{2}+6\cos\left(fx+e\right)+4\right)\sin\left(fx+e\right)-2\cos\left(fx+e\right)+4\right)\sqrt{-bd}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{4\left(bd\cos\left(fx+e\right)^{2}-bd-\left(bd\cos\left(fx+e\right)+bd\right)\sin\left(fx+e\right)\right)}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [1/32*(2*sqrt(-b*d)*b*d*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 - (co
s(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(
-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos(f*x +
 e)^2 - b*d - (b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e) + sqrt(-
b*d)*b*d*cos(f*x + e)*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^2 - 8*(
7*cos(f*x + e)^3 - (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f
*x + e))*sqrt(-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))
+ 72*b*d + 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e)^4 -
8*cos(f*x + e)^2 - 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) + 16*b*d*sqrt(
b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e)))/(f*cos(f*x + e)), -1/32*
(2*sqrt(b*d)*b*d*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 + (cos(f*x +
 e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(b*d)*sq
rt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos(f*x + e)^2 -
b*d + (b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e) - sqrt(b*d)*b*d*
cos(f*x + e)*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^2 + 8*(7*cos(f*x
 + e)^3 + (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*
sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e)) + 72*b*d -
 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e)^4 - 8*cos(f*x
+ e)^2 + 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) - 16*b*d*sqrt(b*sin(f*x
+ e)/cos(f*x + e))*sqrt(d/cos(f*x + e)))/(f*cos(f*x + e))]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)*(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.58, size = 759, normalized size = 4.49

$$-\frac{\left(2i\left(\cos^2\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/8/f*(2*I*cos(f*x+e)^2*sin(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e)
)^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))
/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)
,1/2*2^(1/2))-I*cos(f*x+e)^2*sin(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*
x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x
+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^
(1/2),1/2+1/2*I,1/2*2^(1/2))-I*cos(f*x+e)^2*sin(f*x+e)*((I*cos(f*x+e)-I+sin
(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*
(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e
))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-cos(f*x+e)^2*sin(f*x+e)*((I*cos
(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f
*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e
)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))+cos(f*x+e)^2*sin(f
*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(
f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(
((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-2*cos
(f*x+e)*2^(1/2)+2*2^(1/2))*cos(f*x+e)*(d/cos(f*x+e))^(3/2)*(b*sin(f*x+e)/co
s(f*x+e))^(3/2)/(-1+cos(f*x+e))/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)*(b*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(b\tan\left(e+f\,x\right)\right)}^{3/2}\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(3/2),x)
```

```
[Out] int((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(3/2)*(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.301 $\int \sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=88

$$\frac{b\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}}{f}-\frac{b^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

```
[Out] b^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticF
(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1/2)/f
/(b*tan(f*x+e))^(1/2)+b*(d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2)/f
```

Rubi [A] time = 0.12, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2611, 2616, 2642, 2641}

$$\frac{b\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}}{f}-\frac{b^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] -((b^2*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f
*x]])/(f*Sqrt[b*Tan[e + f*x]])) + (b*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*
x]])/f
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\int \sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}\,dx = \frac{b\sqrt{d\sec(e+fx)}\,\sqrt{b\tan(e+fx)}}{f} - \frac{1}{2}b^2\int \frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx$$

$$= \frac{b\sqrt{d\sec(e+fx)}\,\sqrt{b\tan(e+fx)}}{f} - \frac{\left(b^2\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right.}{2\sqrt{b\tan(e+fx)}}$$

$$= \frac{b\sqrt{d\sec(e+fx)}\,\sqrt{b\tan(e+fx)}}{f} - \frac{\left(b^2\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}\right)}{2\sqrt{b\tan(e+fx)}}$$

$$= -\frac{b^2F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}{f\sqrt{b\tan(e+fx)}} + \frac{b\sqrt{d\sec(e+}}{}$$

Mathematica [C] time = 0.76, size = 105, normalized size = 1.19

$$\frac{b\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}\left(\sec^{\frac{3}{2}}(e+fx) - \frac{\sec^2\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)}{\sqrt{2}}\right)}{f\sec^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (b*Sqrt[d*Sec[e + f*x]]*(Sec[e + f*x]^(3/2) - (Hypergeometric2F1[1/4, 1/2,
5/4, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Sqrt[1 + Sec[e + f*x]])/Sqrt[2
])*Sqrt[b*Tan[e + f*x]])/(f*Sec[e + f*x]^(3/2))
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{d\sec\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}\,b\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b*tan(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d \sec\left(fx+e\right)}\,\left(b \tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))*(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.68, size = 211, normalized size = 2.40

$$\frac{\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\left(i\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \mathrm{Elli}}{2f\left(-1+\cos\left(fx+e\right)\right)\sin\left(fx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/2/f*(b*sin(f*x+e)/cos(f*x+e))^(3/2)*(d/cos(f*x+e))^(1/2)*cos(f*x+e)*(I*(-
I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*cos(f*x+e)*sin(f*x+e)*(-(I*cos(f*x+e)-I
-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f
*x+e))^(1/2),1/2*2^(1/2))*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)+co
s(f*x+e)*2^(1/2)-2^(1/2))/(-1+cos(f*x+e))/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d \sec\left(fx+e\right)}\,\left(b \tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))*(b*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(b\,\tan\left(e+f\,x\right)\right)}^{3/2}\,\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(1/2),x)
[Out] int((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\tan\left(e+fx\right)\right)^{\frac{3}{2}}\sqrt{d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/2)*(b*tan(f*x+e))**(3/2),x)
[Out] Integral((b*tan(e + f*x))**(3/2)*sqrt(d*sec(e + f*x)), x)
```

3.302 $\int \frac{(b\tan(e+fx))^{3/2}}{\sqrt{d\sec(e+fx)}}\,dx$

Optimal. Leaf size=167

$$\frac{b^{3/2}d(b\tan(e+fx))^{3/2}\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f(b\sin(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}+\frac{b^{3/2}d(b\tan(e+fx))^{3/2}\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f(b\sin(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}-\frac{2d\csc(e+fx)(b\tan(e+}{f(d\sec(e+fx))^{3}}$$

```
[Out] -2*d*csc(f*x+e)*(b*tan(f*x+e))^(3/2)/f/(d*sec(f*x+e))^(3/2)+b^(3/2)*d*arcta
n((b*sin(f*x+e))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(3/2)/f/(d*sec(f*x+e))^(3/2)
/(b*sin(f*x+e))^(3/2)+b^(3/2)*d*arctanh((b*sin(f*x+e))^(1/2)/b^(1/2))*(b*ta
n(f*x+e))^(3/2)/f/(d*sec(f*x+e))^(3/2)/(b*sin(f*x+e))^(3/2)
```

Rubi [A] time = 0.13, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2616, 2564, 321, 329, 212, 206, 203}

$$\frac{b^{3/2}d(b\tan(e+fx))^{3/2}\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f(b\sin(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}+\frac{b^{3/2}d(b\tan(e+fx))^{3/2}\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{f(b\sin(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}-\frac{2d\csc(e+fx)(b\tan(e+}{f(d\sec(e+fx))^{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/Sqrt[d*Sec[e + f*x]],x]
```

```
[Out] (-2*d*Csc[e + f*x]*(b*Tan[e + f*x])^(3/2))/(f*(d*Sec[e + f*x])^(3/2)) + (b^
(3/2)*d*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*(b*Tan[e + f*x])^(3/2))/(f*(d*
Sec[e + f*x])^(3/2)*(b*Sin[e + f*x])^(3/2)) + (b^(3/2)*d*ArcTanh[Sqrt[b*Sin
[e + f*x]]/Sqrt[b]]*(b*Tan[e + f*x])^(3/2))/(f*(d*Sec[e + f*x])^(3/2)*(b*Si
n[e + f*x])^(3/2))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{3/2}}{\sqrt{d\sec(e+fx)}}\,dx = \frac{\left(d(b\tan(e+fx))^{3/2}\right)\int \sec(e+fx)(b\sin(e+fx))^{3/2}\,dx}{(d\sec(e+fx))^{3/2}(b\sin(e+fx))^{3/2}}$$

$$= \frac{\left(d(b\tan(e+fx))^{3/2}\right)\text{Subst}\left(\int \frac{x^{3/2}}{1-\frac{x^2}{b^2}}\,dx, x, b\sin(e+fx)\right)}{bf(d\sec(e+fx))^{3/2}(b\sin(e+fx))^{3/2}}$$

$$= -\frac{2d\csc(e+fx)(b\tan(e+fx))^{3/2}}{f(d\sec(e+fx))^{3/2}} + \frac{\left(bd(b\tan(e+fx))^{3/2}\right)\text{Subst}\left(\int \frac{1}{\sqrt{x}\left(1-\frac{x^2}{b^2}\right)}\,dx, x, b\,\text{s}\right.}{f(d\sec(e+fx))^{3/2}(b\sin(e+fx))^{3/2}}$$

$$= -\frac{2d\csc(e+fx)(b\tan(e+fx))^{3/2}}{f(d\sec(e+fx))^{3/2}} + \frac{\left(2bd(b\tan(e+fx))^{3/2}\right)\text{Subst}\left(\int \frac{1}{1-\frac{x^4}{b^2}}\,dx, x, \sqrt{b\,\text{si}}\right.}{f(d\sec(e+fx))^{3/2}(b\sin(e+fx))^{3/2}}$$

$$= -\frac{2d\csc(e+fx)(b\tan(e+fx))^{3/2}}{f(d\sec(e+fx))^{3/2}} + \frac{\left(b^2d(b\tan(e+fx))^{3/2}\right)\text{Subst}\left(\int \frac{1}{b-x^2}\,dx, x, \sqrt{b\,\text{sin}}\right.}{f(d\sec(e+fx))^{3/2}(b\sin(e+fx))^{3/2}}$$

$$= -\frac{2d\csc(e+fx)(b\tan(e+fx))^{3/2}}{f(d\sec(e+fx))^{3/2}} + \frac{b^{3/2}d\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)(b\tan(e+fx))^{3/2}}{f(d\sec(e+fx))^{3/2}(b\sin(e+fx))^{3/2}} + \frac{b^{3/2}d}{f}$$

<u>**Mathematica**</u> [C] time = 4.29, size = 64, normalized size = 0.38

$$\frac{2(b\tan(e+fx))^{5/2}\,{}_2F_1\left(-\frac{1}{4},-\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)}{bf\left(-\tan^2(e+fx)\right)^{5/4}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/Sqrt[d*Sec[e + f*x]],x]
```

```
[Out] (2*Hypergeometric2F1[-1/4, -1/4, 3/4, Sec[e + f*x]^2]*(b*Tan[e + f*x])^(5/2
))/(b*f*Sqrt[d*Sec[e + f*x]]*(-Tan[e + f*x]^2)^(5/4))
```

fricas [B] time = 1.07, size = 741, normalized size = 4.44

$$\left[-\frac{2\,bd\sqrt{-\frac{b}{d}}\,\arctan\left(\frac{\left(\cos\left(fx+e\right)^{3}-5\,\cos\left(fx+e\right)^{2}-\left(\cos\left(fx+e\right)^{2}+6\,\cos\left(fx+e\right)+4\right)\sin\left(fx+e\right)-2\,\cos\left(fx+e\right)+4\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{-\frac{b}{d}}\,\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{4\left(b\cos\left(fx+e\right)^{2}-\left(b\cos\left(fx+e\right)+b\right)\sin\left(fx+e\right)-b\right)}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(2*b*d*sqrt(-b/d)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 - (co
s(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(
b*sin(f*x + e)/cos(f*x + e))*sqrt(-b/d)*sqrt(d/cos(f*x + e))/(b*cos(f*x + e
)^2 - (b*cos(f*x + e) + b)*sin(f*x + e) - b)) - b*d*sqrt(-b/d)*log((b*cos(f
*x + e)^4 - 72*b*cos(f*x + e)^2 + 8*(7*cos(f*x + e)^3 - (cos(f*x + e)^3 - 8
*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x +
 e))*sqrt(-b/d)*sqrt(d/cos(f*x + e)) + 28*(b*cos(f*x + e)^2 - 2*b)*sin(f*x
+ e) + 72*b)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 - 4*(cos(f*x + e)^2 - 2)*si
n(f*x + e) + 8)) + 16*b*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x +
e))*cos(f*x + e))/(d*f), 1/8*(2*b*d*sqrt(b/d)*arctan(1/4*(cos(f*x + e)^3 -
5*cos(f*x + e)^2 + (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*c
os(f*x + e) + 4)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(b/d)*sqrt(d/cos(f*x
 + e))/(b*cos(f*x + e)^2 + (b*cos(f*x + e) + b)*sin(f*x + e) - b)) + b*d*sq
rt(b/d)*log((b*cos(f*x + e)^4 - 72*b*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 +
 (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*si
n(f*x + e)/cos(f*x + e))*sqrt(b/d)*sqrt(d/cos(f*x + e)) - 28*(b*cos(f*x + e
)^2 - 2*b)*sin(f*x + e) + 72*b)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 + 4*(cos
(f*x + e)^2 - 2)*sin(f*x + e) + 8)) - 16*b*sqrt(b*sin(f*x + e)/cos(f*x + e)
)*sqrt(d/cos(f*x + e))*cos(f*x + e))/(d*f)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\sqrt{d\sec\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/sqrt(d*sec(f*x + e)), x)
```

maple [C] time = 0.68, size = 719, normalized size = 4.31

$$\frac{\left(2i\sin\left(fx+e\right)\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(2*I*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-
I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(
1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-
I*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x
+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*Elli
pticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2)
)-I*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f
*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*El
lipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/
2))-sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f
*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*El
lipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/
2))+sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f
*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*El
lipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/
2))-2*cos(f*x+e)*2^(1/2)+2*2^(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(3/2)*cos(f*x
+e)/(-1+cos(f*x+e))/(d/cos(f*x+e))^(1/2)/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\sqrt{d\sec\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/sqrt(d*sec(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}{\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(1/2),x)
[Out] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(e+fx\right)\right)^{\frac{3}{2}}}{\sqrt{d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(d*sec(f*x+e))**(1/2),x)
[Out] Integral((b*tan(e + f*x))**(3/2)/sqrt(d*sec(e + f*x)), x)
```

3.303 $\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{2b^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3d^2f\sqrt{b\tan(e+fx)}}-\frac{2b\sqrt{b\tan(e+fx)}}{3f(d\sec(e+fx))^{3/2}}$$

```
[Out] -2/3*b^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Elli
pticF(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1
/2)/d^2/f/(b*tan(f*x+e))^(1/2)-2/3*b*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^
(3/2)
```

Rubi [A] time = 0.12, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2610, 2616, 2642, 2641}

$$\frac{2b^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3d^2f\sqrt{b\tan(e+fx)}}-\frac{2b\sqrt{b\tan(e+fx)}}{3f(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*b^2*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f
*x]])/(3*d^2*f*Sqrt[b*Tan[e + f*x]]) - (2*b*Sqrt[b*Tan[e + f*x]])/(3*f*(d*S
ec[e + f*x])^(3/2))
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{3/2}}\,dx &= -\frac{2b\sqrt{b\tan(e+fx)}}{3f(d\sec(e+fx))^{3/2}} + \frac{b^2\int \frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx}{3d^2}\\
&= -\frac{2b\sqrt{b\tan(e+fx)}}{3f(d\sec(e+fx))^{3/2}} + \frac{\left(b^2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}\right)\int \frac{1}{\sqrt{b\sin(e+fx)}}\,dx}{3d^2\sqrt{b\tan(e+fx)}}\\
&= -\frac{2b\sqrt{b\tan(e+fx)}}{3f(d\sec(e+fx))^{3/2}} + \frac{\left(b^2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}\right)\int \frac{1}{\sqrt{\sin(e+fx)}}\,dx}{3d^2\sqrt{b\tan(e+fx)}}\\
&= \frac{2b^2F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}{3d^2f\sqrt{b\tan(e+fx)}} - \frac{2b\sqrt{b\tan(e+fx)}}{3f(d\sec(e+fx))^{3/2}}
\end{aligned}$$

Mathematica [C] time = 0.59, size = 98, normalized size = 1.02

$$-\frac{2b\sqrt{b\tan(e+fx)}\left(\sqrt{\sec(e+fx)+1}-\sqrt{2}\sec^{\frac{3}{2}}(e+fx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)\right)}{3f\sqrt{\sec(e+fx)+1}\,(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (-2*b*(-(Sqrt[2]*Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[(e + f*x)/2]^2]*Sec[
e + f*x]^(3/2)) + Sqrt[1 + Sec[e + f*x]])*Sqrt[b*Tan[e + f*x]])/(3*f*(d*Sec
[e + f*x])^(3/2)*Sqrt[1 + Sec[e + f*x]])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,b\tan\left(fx+e\right)}{d^2\sec\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b*tan(f*x + e)/(d^2*sec(
f*x + e)^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(3/2), x)
```

maple [C] time = 0.67, size = 207, normalized size = 2.16

$$-\frac{\left(i\sin\left(fx+e\right)\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx\right.}{\sin\left(fx+e\right)}}\right.\right.}{3f\left(-1+\cos\left(fx+e\right)\right)\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/3/f*(I*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-
I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(
f*x+e))^(1/2),1/2*2^(1/2))*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)+c
os(f*x+e)^2*2^(1/2)-cos(f*x+e)*2^(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(3/2)/(-1
+cos(f*x+e))/(d/cos(f*x+e))^(3/2)/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(3/2),x)
[Out] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(e+fx\right)\right)^{\frac{3}{2}}}{\left(d\sec\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(d*sec(f*x+e))**(3/2),x)
[Out] Integral((b*tan(e + f*x))**(3/2)/(d*sec(e + f*x))**(3/2), x)
```

3.304 $\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=34

$$\frac{2(b\tan(e+fx))^{5/2}}{5bf(d\sec(e+fx))^{5/2}}$$

```
[Out] 2/5*(b*tan(f*x+e))^(5/2)/b/f/(d*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.06, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2605}

$$\frac{2(b\tan(e+fx))^{5/2}}{5bf(d\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*(b*Tan[e + f*x])^(5/2))/(5*b*f*(d*Sec[e + f*x])^(5/2))
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{5/2}}\,dx = \frac{2(b\tan(e+fx))^{5/2}}{5bf(d\sec(e+fx))^{5/2}}$$

Mathematica [B] time = 1.37, size = 141, normalized size = 4.15

$$-\frac{b\sec^{\frac{3}{2}}(e+fx)\sqrt{b\tan(e+fx)}\left(-\sqrt{\sec(e+fx)+1}\,\sec^2\left(\frac{1}{2}(e+fx)\right)+\sqrt{\frac{1}{\cos(e+fx)+1}}\,\cos(3(e+fx))\sec^{\frac{3}{2}}(e+fx}{10f\sqrt{\frac{1}{\cos(e+fx)+1}}\,(d\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(5/2),x]
```

```
[Out] -1/10*(b*Sec[e + f*x]^(3/2)*(Sqrt[(1 + Cos[e + f*x])^(-1)]*Sqrt[Sec[e + f*x
]] + Sqrt[(1 + Cos[e + f*x])^(-1)]*Cos[3*(e + f*x)]*Sec[e + f*x]^(3/2) - Se
c[(e + f*x)/2]^2*Sqrt[1 + Sec[e + f*x]])*Sqrt[b*Tan[e + f*x]])/(f*Sqrt[(1 +
 Cos[e + f*x])^(-1)]*(d*Sec[e + f*x])^(5/2))
```

fricas [B] time = 0.53, size = 58, normalized size = 1.71

$$-\frac{2\left(b\cos\left(fx+e\right)^{3}-b\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{5\,d^{3}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] -2/5*(b*cos(f*x + e)^3 - b*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*
sqrt(d/cos(f*x + e))/(d^3*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(5/2), x)
```

maple [A] time = 0.60, size = 50, normalized size = 1.47

$$\frac{2\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)}{5f\cos\left(fx+e\right)\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(5/2),x)
```

```
[Out] 2/5/f*(b*sin(f*x+e)/cos(f*x+e))^(3/2)*sin(f*x+e)/cos(f*x+e)/(d/cos(f*x+e))^
(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(5/2), x)
```

mupad [B] time = 3.16, size = 65, normalized size = 1.91

$$\frac{b\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\,\left(\cos\left(e+f\,x\right)-\cos\left(3\,e+3\,f\,x\right)\right)\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{10\,d^3\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(5/2),x)
```

```
[Out] (b*(d/cos(e + f*x))^(1/2)*(cos(e + f*x) - cos(3*e + 3*f*x))*((b*sin(2*e + 2
*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(10*d^3*f)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(d*sec(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.305 $\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=131

$$\frac{4b^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{21d^4f\sqrt{b\tan(e+fx)}}+\frac{2b\sqrt{b\tan(e+fx)}}{21d^2f(d\sec(e+fx))^{3/2}}-\frac{2b\sqrt{b\tan(e+fx)}}{7f(d\sec(e+fx))^{7/2}}$$

```
[Out] -4/21*b^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Ell
ipticF(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(
1/2)/d^4/f/(b*tan(f*x+e))^(1/2)-2/7*b*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))
^(7/2)+2/21*b*(b*tan(f*x+e))^(1/2)/d^2/f/(d*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.18, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2610, 2612, 2616, 2642, 2641}

$$\frac{4b^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{21d^4f\sqrt{b\tan(e+fx)}}+\frac{2b\sqrt{b\tan(e+fx)}}{21d^2f(d\sec(e+fx))^{3/2}}-\frac{2b\sqrt{b\tan(e+fx)}}{7f(d\sec(e+fx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(7/2),x]
```

```
[Out] (4*b^2*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f
*x]])/(21*d^4*f*Sqrt[b*Tan[e + f*x]]) - (2*b*Sqrt[b*Tan[e + f*x]])/(7*f*(d*
Sec[e + f*x])^(7/2)) + (2*b*Sqrt[b*Tan[e + f*x]])/(21*d^2*f*(d*Sec[e + f*x]
)^(3/2))
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
```

```
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{7/2}}\,dx = -\frac{2b\sqrt{b\tan(e+fx)}}{7f(d\sec(e+fx))^{7/2}} + \frac{b^2\int \frac{1}{(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}\,dx}{7d^2}$$

$$= -\frac{2b\sqrt{b\tan(e+fx)}}{7f(d\sec(e+fx))^{7/2}} + \frac{2b\sqrt{b\tan(e+fx)}}{21d^2f(d\sec(e+fx))^{3/2}} + \frac{\left(2b^2\right)\int \frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx}{21d^4}$$

$$= -\frac{2b\sqrt{b\tan(e+fx)}}{7f(d\sec(e+fx))^{7/2}} + \frac{2b\sqrt{b\tan(e+fx)}}{21d^2f(d\sec(e+fx))^{3/2}} + \frac{\left(2b^2\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right.}{21d^4\sqrt{b\tan(e+fx}}$$

$$= -\frac{2b\sqrt{b\tan(e+fx)}}{7f(d\sec(e+fx))^{7/2}} + \frac{2b\sqrt{b\tan(e+fx)}}{21d^2f(d\sec(e+fx))^{3/2}} + \frac{\left(2b^2\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}\,\right)}{21d^4\sqrt{b\tan(e+fx)}}$$

$$= \frac{4b^2F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}{21d^4f\sqrt{b\tan(e+fx)}} - \frac{2b\sqrt{b\tan(e+fx)}}{7f(d\sec(e+fx))^{7/2}} + \frac{2b}{21d^2f}$$

Mathematica [C] time = 1.30, size = 105, normalized size = 0.80

$$-\frac{b\sqrt{b\tan(e+fx)}\left(4\sec^2(e+fx)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\sec^2(e+fx)\right)+(3\cos(2(e+fx))+1)\sqrt[4]{-\tan^2(e+fx)}\right)}{21d^2f\sqrt[4]{-\tan^2(e+fx)}\,(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(7/2),x]
```

```
[Out] -1/21*(b*Sqrt[b*Tan[e + f*x]]*(4*Hypergeometric2F1[1/4, 3/4, 5/4, Sec[e + f
*x]^2]*Sec[e + f*x]^2 + (1 + 3*Cos[2*(e + f*x)])*(-Tan[e + f*x]^2)^(1/4)))/
(d^2*f*(d*Sec[e + f*x])^(3/2)*(-Tan[e + f*x]^2)^(1/4))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,b\tan\left(fx+e\right)}{d^4\sec\left(fx+e\right)^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b*tan(f*x + e)/(d^4*sec(
f*x + e)^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(7/2), x)
```

maple [C] time = 0.73, size = 241, normalized size = 1.84

$$-\frac{\left(2i\sin\left(fx+e\right)\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(\right.}{\sin\left(fx+e\right)}}\right.\right.}{21f\left(-1+\cos\left(fx+e\right)\right)\cos}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(7/2),x)
```

```
[Out] -1/21/f*(2*I*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e
)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))
^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2)
)+3*cos(f*x+e)^4*2^(1/2)-3*cos(f*x+e)^3*2^(1/2)-cos(f*x+e)^2*2^(1/2)+cos(f*
x+e)*2^(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(3/2)/(-1+cos(f*x+e))/cos(f*x+e)^2/
sin(f*x+e)/(d/cos(f*x+e))^(7/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(7/2),x)
```

```
[Out] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(d*sec(f*x+e))**(7/2),x)
```

```
[Out] Timed out
```

3.306 $\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=103

$$\frac{8b\sqrt{b\tan(e+fx)}}{45d^4f\sqrt{d\sec(e+fx)}}+\frac{2b\sqrt{b\tan(e+fx)}}{45d^2f(d\sec(e+fx))^{5/2}}-\frac{2b\sqrt{b\tan(e+fx)}}{9f(d\sec(e+fx))^{9/2}}$$

```
[Out] -2/9*b*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^(9/2)+2/45*b*(b*tan(f*x+e))^(1
/2)/d^2/f/(d*sec(f*x+e))^(5/2)+8/45*b*(b*tan(f*x+e))^(1/2)/d^4/f/(d*sec(f*x
+e))^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2610, 2612, 2605}

$$\frac{8b\sqrt{b\tan(e+fx)}}{45d^4f\sqrt{d\sec(e+fx)}}+\frac{2b\sqrt{b\tan(e+fx)}}{45d^2f(d\sec(e+fx))^{5/2}}-\frac{2b\sqrt{b\tan(e+fx)}}{9f(d\sec(e+fx))^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(9/2),x]
```

```
[Out] (-2*b*Sqrt[b*Tan[e + f*x]])/(9*f*(d*Sec[e + f*x])^(9/2)) + (2*b*Sqrt[b*Tan[
e + f*x]])/(45*d^2*f*(d*Sec[e + f*x])^(5/2)) + (8*b*Sqrt[b*Tan[e + f*x]])/(
45*d^4*f*Sqrt[d*Sec[e + f*x]])
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
```

```
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\begin{aligned}\int \frac{(b\tan(e+fx))^{3/2}}{(d\sec(e+fx))^{9/2}}\,dx &= -\frac{2b\sqrt{b\tan(e+fx)}}{9f(d\sec(e+fx))^{9/2}}+\frac{b^2\int \frac{1}{(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}\,dx}{9d^2}\\ &= -\frac{2b\sqrt{b\tan(e+fx)}}{9f(d\sec(e+fx))^{9/2}}+\frac{2b\sqrt{b\tan(e+fx)}}{45d^2f(d\sec(e+fx))^{5/2}}+\frac{\left(4b^2\right)\int \frac{1}{\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}\,dx}{45d^4}\\ &= -\frac{2b\sqrt{b\tan(e+fx)}}{9f(d\sec(e+fx))^{9/2}}+\frac{2b\sqrt{b\tan(e+fx)}}{45d^2f(d\sec(e+fx))^{5/2}}+\frac{8b\sqrt{b\tan(e+fx)}}{45d^4f\sqrt{d\sec(e+fx)}}\end{aligned}$$

Mathematica [A] time = 3.36, size = 158, normalized size = 1.53

$$-\frac{b\sqrt{\sec(e+fx)}\sqrt{b\tan(e+fx)}\left(-21\sqrt{\sec(e+fx)+1}\sec^2\left(\frac{1}{2}(e+fx)\right)+\sqrt{\frac{1}{\cos(e+fx)+1}}\,(21\cos(3(e+fx))+5\cos\right.}{360d^3f\sqrt{\frac{1}{\cos(e+fx)+1}}\,(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(3/2)/(d*Sec[e + f*x])^(9/2),x]
```

```
[Out] -1/360*(b*Sqrt[Sec[e + f*x]]*(16*Sqrt[(1 + Cos[e + f*x])^(-1)]*Sqrt[Sec[e +
 f*x]] + Sqrt[(1 + Cos[e + f*x])^(-1)]*(21*Cos[3*(e + f*x)] + 5*Cos[5*(e +
f*x)])*Sec[e + f*x]^(3/2) - 21*Sec[(e + f*x)/2]^2*Sqrt[1 + Sec[e + f*x]])*S
qrt[b*Tan[e + f*x]])/(d^3*f*Sqrt[(1 + Cos[e + f*x])^(-1)]*(d*Sec[e + f*x])^
(3/2))
```

fricas [A] time = 0.59, size = 70, normalized size = 0.68

$$-\frac{2\left(5\,b\cos\left(fx+e\right)^5-b\cos\left(fx+e\right)^3-4\,b\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{45\,d^5f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(9/2),x, algorithm="fricas")
```

```
[Out] -2/45*(5*b*cos(f*x + e)^5 - b*cos(f*x + e)^3 - 4*b*cos(f*x + e))*sqrt(b*sin
(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(d^5*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\tan(fx+e))^{\frac{3}{2}}}{(d\sec(fx+e))^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(9/2), x)
```

maple [A] time = 0.59, size = 62, normalized size = 0.60

$$\frac{2\left(5\left(\cos^2(fx+e)\right)+4\right)\left(\frac{b\sin(fx+e)}{\cos(fx+e)}\right)^{\frac{3}{2}}\sin(fx+e)}{45f\cos(fx+e)^3\left(\frac{d}{\cos(fx+e)}\right)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(9/2),x)
```

```
[Out] 2/45/f*(5*cos(f*x+e)^2+4)*(b*sin(f*x+e)/cos(f*x+e))^(3/2)*sin(f*x+e)/cos(f*
x+e)^3/(d/cos(f*x+e))^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\tan(fx+e))^{\frac{3}{2}}}{(d\sec(fx+e))^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(3/2)/(d*sec(f*x+e))^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(3/2)/(d*sec(f*x + e))^(9/2), x)
```

mupad [B] time = 3.52, size = 78, normalized size = 0.76

$$-\frac{b\sqrt{\frac{d}{\cos(e+f\,x)}}\,\sqrt{\frac{b\,\sin(2\,e+2\,f\,x)}{\cos(2\,e+2\,f\,x)+1}}\,\left(21\,\cos(3\,e+3\,f\,x)-26\,\cos(e+f\,x)+5\,\cos(5\,e+5\,f\,x)\right)}{360\,d^5\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(3/2)/(d/cos(e + f*x))^(9/2),x)
```

```
[Out] -(b*(d/cos(e + f*x))^(1/2)*((b*sin(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1
/2)*(21*cos(3*e + 3*f*x) - 26*cos(e + f*x) + 5*cos(5*e + 5*f*x)))/(360*d^5*
f)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(3/2)/(d*sec(f*x+e))**(9/2),x)
```

```
[Out] Timed out
```

3.307 $\int (d\sec(e+fx))^{5/2}(b\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=208

$$\frac{3b^{5/2}d^3\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{32f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{3b^{5/2}d^3\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{32f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{3bd^2(b\tan(e+fx))^{3/2}}{16f}$$

```
[Out] 3/32*b^(5/2)*d^3*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(1/2)/
f/(d*sec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)-3/32*b^(5/2)*d^3*arctanh((b*sin
(f*x+e))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^(1/2)/(b*sin(
f*x+e))^(1/2)+1/4*b*(d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(3/2)/f-3/16*b*d^2*
(d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2)/f
```

Rubi [A] time = 0.23, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {2611, 2613, 2616, 2564, 329, 298, 203, 206}

$$\frac{3b^{5/2}d^3\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{32f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{3b^{5/2}d^3\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{32f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{3bd^2(b\tan(e+fx))^{3/2}}{16f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (3*b^(5/2)*d^3*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(
32*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]]) - (3*b^(5/2)*d^3*ArcTanh[Sq
rt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(32*f*Sqrt[d*Sec[e + f*x]
]*Sqrt[b*Sin[e + f*x]]) - (3*b*d^2*Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3
/2))/(16*f) + (b*(d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2))/(4*f)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int (d\sec(e+fx))^{5/2}(b\tan(e+fx))^{5/2}\,dx = \frac{b(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}}{4f} - \frac{1}{8}\left(3b^2\right)\int (d\sec(e+fx))^{5/2}\sqrt{}$$

$$= -\frac{3bd^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{16f} + \frac{b(d\sec(e+fx))^{5/2}(b\tan(e}{4f}$$

$$= -\frac{3bd^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{16f} + \frac{b(d\sec(e+fx))^{5/2}(b\tan(e}{4f}$$

$$= -\frac{3bd^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{16f} + \frac{b(d\sec(e+fx))^{5/2}(b\tan(e}{4f}$$

$$= -\frac{3bd^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{16f} + \frac{b(d\sec(e+fx))^{5/2}(b\tan(e}{4f}$$

$$= -\frac{3bd^2\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{16f} + \frac{b(d\sec(e+fx))^{5/2}(b\tan(e}{4f}$$

$$= \frac{3b^{5/2}d^3\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{b\tan(e+fx)}}{32f\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} - \frac{3b^{5/2}d^3\tanh^{-1}\left(\frac{\sqrt{b\sin(e}}{\sqrt{b}}\right.}{32f\sqrt{d\sec(e+fx}}$$

Mathematica [A] time = 3.15, size = 189, normalized size = 0.91

$$\frac{b^3(d\sec(e+fx))^{5/2}\left(16\sec^{\frac{9}{2}}(e+fx) - 28\sec^{\frac{5}{2}}(e+fx) + 12\sqrt{\sec(e+fx)} - 6\sqrt[4]{\tan^2(e+fx)}\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right.\right.}{64f\sec^{\frac{5}{2}}(e+fx)\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (b^3*(d*Sec[e + f*x])^(5/2)*(12*Sqrt[Sec[e + f*x]] - 28*Sec[e + f*x]^(5/2)
+ 16*Sec[e + f*x]^(9/2) - 6*ArcTan[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4
)]*(Tan[e + f*x]^2)^(1/4) + 3*(Log[1 - Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^
(1/4)] - Log[1 + Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)])*(Tan[e + f*x]^
2)^(1/4)))/(64*f*Sec[e + f*x]^(5/2)*Sqrt[b*Tan[e + f*x]])
```

fricas [B] time = 0.90, size = 852, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [1/256*(6*sqrt(-b*d)*b^2*d^2*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2
- (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*
sqrt(-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos(
f*x + e)^2 - b*d - (b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e)^3 +
 3*sqrt(-b*d)*b^2*d^2*cos(f*x + e)^3*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f
*x + e)^2 + 8*(7*cos(f*x + e)^3 - (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x
 + e) - 8*cos(f*x + e))*sqrt(-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d
/cos(f*x + e)) + 72*b*d + 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(co
s(f*x + e)^4 - 8*cos(f*x + e)^2 - 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8))
 - 16*(3*b^2*d^2*cos(f*x + e)^2 - 4*b^2*d^2)*sqrt(b*sin(f*x + e)/cos(f*x +
e))*sqrt(d/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3), 1/256*(6*sqrt(b*
d)*b^2*d^2*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 + (cos(f*x + e)^2
+ 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(b*d)*sqrt(b*s
in(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos(f*x + e)^2 - b*d +
(b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e)^3 + 3*sqrt(b*d)*b^2*d^
2*cos(f*x + e)^3*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^2 + 8*(7*cos
(f*x + e)^3 + (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x +
e))*sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e)) + 72*b
*d - 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e)^4 - 8*cos(
f*x + e)^2 + 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) - 16*(3*b^2*d^2*cos(
f*x + e)^2 - 4*b^2*d^2)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x +
e))*sin(f*x + e))/(f*cos(f*x + e)^3)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.64, size = 628, normalized size = 3.02

$$-\frac{\left(3i\left(\cos^{4}\left(fx+e\right)\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\ \mathrm{EllipticPi}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+s}{\sin\left(fx+\right.}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/64/f*(3*I*cos(f*x+e)^4*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-
(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e
))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*
I,1/2*2^(1/2))-3*I*cos(f*x+e)^4*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1
/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin
(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/
2+1/2*I,1/2*2^(1/2))-3*cos(f*x+e)^4*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e)
)^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))
/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2
),1/2-1/2*I,1/2*2^(1/2))-3*cos(f*x+e)^4*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*
x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x
+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^
(1/2),1/2+1/2*I,1/2*2^(1/2))+6*cos(f*x+e)^3*2^(1/2)-6*cos(f*x+e)^2*2^(1/2)-
8*cos(f*x+e)*2^(1/2)+8*2^(1/2))*cos(f*x+e)*(d/cos(f*x+e))^(5/2)*(b*sin(f*x+
e)/cos(f*x+e))^(5/2)/(-1+cos(f*x+e))/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)*(b*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(5/2)*(b*tan(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(b\tan\left(e+f\,x\right)\right)^{5/2}\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(5/2),x)
```

```
[Out] int((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(5/2)*(b*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.308 $\int (d\sec(e+fx))^{3/2}(b\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=131

$$\frac{b^2d^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{bd^2(b\tan(e+fx))^{3/2}}{2f\sqrt{d\sec(e+fx)}}+\frac{b(b\tan(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}{3f}$$

```
[Out] -1/2*b^2*d^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*
EllipticE(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/f/(d*sec(
f*x+e))^(1/2)/sin(f*x+e)^(1/2)+1/3*b*(d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(3
/2)/f-1/2*b*d^2*(b*tan(f*x+e))^(3/2)/f/(d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2611, 2613, 2616, 2640, 2639}

$$\frac{b^2d^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{bd^2(b\tan(e+fx))^{3/2}}{2f\sqrt{d\sec(e+fx)}}+\frac{b(b\tan(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (b^2*d^2*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(2*f*Sqrt[d
*Sec[e + f*x]]*Sqrt[Sin[e + f*x]]) - (b*d^2*(b*Tan[e + f*x])^(3/2))/(2*f*Sq
rt[d*Sec[e + f*x]]) + (b*(d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2))/(3*
f)
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
```

```
*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\int (d\sec(e+fx))^{3/2}(b\tan(e+fx))^{5/2}\,dx = \frac{b(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}{3f} - \frac{1}{2}b^2\int (d\sec(e+fx))^{3/2}\sqrt{b\,\text{ta}}$$

$$= -\frac{bd^2(b\tan(e+fx))^{3/2}}{2f\sqrt{d\sec(e+fx)}} + \frac{b(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}{3f} + \frac{1}{4}\Big(b$$

$$= -\frac{bd^2(b\tan(e+fx))^{3/2}}{2f\sqrt{d\sec(e+fx)}} + \frac{b(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}{3f} + \frac{\big(b^2d}{}$$

$$= -\frac{bd^2(b\tan(e+fx))^{3/2}}{2f\sqrt{d\sec(e+fx)}} + \frac{b(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}{3f} + \frac{\big(b^2d}{}$$

$$= \frac{b^2d^2E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{2f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} - \frac{bd^2(b\tan(e+fx))^{3/2}}{2f\sqrt{d\sec(e+fx)}} +$$

Mathematica [C] time = 2.35, size = 93, normalized size = 0.71

$$\frac{b^3d^2\left(-3\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)+2\sec^4(e+fx)-5\sec^2(e+fx)+3\right)}{6f\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (b^3*d^2*(3 - 5*Sec[e + f*x]^2 + 2*Sec[e + f*x]^4 - 3*Hypergeometric2F1[-1/
4, 1/4, 3/4, Sec[e + f*x]^2]*(-Tan[e + f*x]^2)^(1/4)))/(6*f*Sqrt[d*Sec[e +
f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}b^{2}d\sec\left(fx+e\right)\tan\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b^2*d*sec(f*x + e)*tan(f
*x + e)^2, x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.59, size = 593, normalized size = 4.53

$$-\frac{\left(6\left(\cos^{4}\left(fx+e\right)\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\ \text{EllipticE}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\cdots}{\sin\left(fx+e\right)\cdots}}\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/12/f*(6*cos(f*x+e)^4*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I
*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))
^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2)
)-3*cos(f*x+e)^4*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*
x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*
EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))+6*cos
```

```
(f*x+e)^3*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-
sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*Ellipti
cE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-3*cos(f*x+e)
^3*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x
+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*
cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-3*cos(f*x+e)^3*2^(1
/2)+5*cos(f*x+e)^2*2^(1/2)-2*2^(1/2))*cos(f*x+e)*(d/cos(f*x+e))^(3/2)*(b*si
n(f*x+e)/cos(f*x+e))^(5/2)/sin(f*x+e)^3*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d \sec \left(fx + e\right)\right)^{\frac{3}{2}} \left(b \tan \left(fx + e\right)\right)^{\frac{5}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(5/2),x, algorithm="maxima")
[Out] integrate((d*sec(f*x + e))^(3/2)*(b*tan(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(b\,\tan\left(e+f\,x\right)\right)}^{5/2}\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(3/2),x)
[Out] int((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(3/2)*(b*tan(f*x+e))**(5/2),x)
[Out] Timed out
```

3.309 $\int \sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{5/2}\,dx$

Optimal. Leaf size=169

$$\frac{3b^{5/2}d\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{3b^{5/2}d\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}+\frac{b(b\tan(e+fx))^{3/2}\sqrt{d\sec(e+fx)}}{2f}$$

```
[Out] 3/4*b^(5/2)*d*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(1/2)/f/(
d*sec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)-3/4*b^(5/2)*d*arctanh((b*sin(f*x+e
))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))^(1/2)/(b*sin(f*x+e)
)^(1/2)+1/2*b*(d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(3/2)/f
```

Rubi [A] time = 0.15, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2611, 2616, 2564, 329, 298, 203, 206}

$$\frac{3b^{5/2}d\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{3b^{5/2}d\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}+\frac{b(b\tan(e+fx))^{3/2}\sqrt{d\sec(e+fx)}}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (3*b^(5/2)*d*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(4*
f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]]) - (3*b^(5/2)*d*ArcTanh[Sqrt[b*
Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(4*f*Sqrt[d*Sec[e + f*x]]*Sqrt
[b*Sin[e + f*x]]) + (b*Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3/2))/(2*f)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
```

```
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{5/2}\,dx = \frac{b\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2f} - \frac{1}{4}\left(3b^2\right)\int \sqrt{d\sec(e+fx)}\,\sqrt{b\tan(}$$

$$= \frac{b\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2f} - \frac{\left(3b^2d\sqrt{b\tan(e+fx)}\right)\int \sec(e+f}{4\sqrt{d\sec(e+fx)}\,\sqrt{b\sin}}$$

$$= \frac{b\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2f} - \frac{\left(3bd\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{\sqrt{}}{1-}\right.}{4f\sqrt{d\sec(e+fx)}\,\sqrt{b\,s}}$$

$$= \frac{b\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2f} - \frac{\left(3bd\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{x^2}{1-}\right.}{2f\sqrt{d\sec(e+fx)}\,\sqrt{b}}$$

$$= \frac{b\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}{2f} - \frac{\left(3b^3d\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{}{b-}\right.}{4f\sqrt{d\sec(e+fx)}\,\sqrt{b}}$$

$$= \frac{3b^{5/2}d\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{b\tan(e+fx)}}{4f\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}} - \frac{3b^{5/2}d\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right.}{4f\sqrt{d\sec(e+fx)}\,\sqrt{b}}$$

Mathematica [A] time = 1.75, size = 182, normalized size = 1.08

$$\frac{\csc^3(e+fx)(b\tan(e+fx))^{5/2}\sqrt{d\sec(e+fx)}\left(4\sec^{\frac{5}{2}}(e+fx)-4\sqrt{\sec(e+fx)}-6\sqrt[4]{\tan^2(e+fx)}\tan^{-1}\left(\frac{\sqrt{\sec(e+}}{\sqrt[4]{\tan^2(e-}}\right.\right.}{8f\sec^{\frac{7}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (Csc[e + f*x]^3*Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(5/2)*(-4*Sqrt[Sec[e
+ f*x]] + 4*Sec[e + f*x]^(5/2) - 6*ArcTan[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^
2)^(1/4)]*(Tan[e + f*x]^2)^(1/4) + 3*(Log[1 - Sqrt[Sec[e + f*x]]/(Tan[e + f
*x]^2)^(1/4)] - Log[1 + Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)])*(Tan[e
+ f*x]^2)^(1/4)))/(8*f*Sec[e + f*x]^(7/2))
```

fricas [B] time = 0.74, size = 788, normalized size = 4.66

$$\left[\frac{6\sqrt{-bd}\,b^2 \arctan\left(\frac{\left(\cos\left(fx+e\right)^3 - 5\cos\left(fx+e\right)^2 - \left(\cos\left(fx+e\right)^2 + 6\cos\left(fx+e\right)+4\right)\sin\left(fx+e\right) - 2\cos\left(fx+e\right)+4\right)\sqrt{-bd}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{4\left(bd\cos\left(fx+e\right)^2 - bd - \left(bd\cos\left(fx+e\right)+bd\right)\sin\left(fx+e\right)\right)}\right)}{} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [1/32*(6*sqrt(-b*d)*b^2*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 - (co
s(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(
-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos(f*x +
 e)^2 - b*d - (b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e) + 3*sqrt
(-b*d)*b^2*cos(f*x + e)*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^2 + 8
*(7*cos(f*x + e)^3 - (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos
(f*x + e))*sqrt(-b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e)
) + 72*b*d + 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e)^4
- 8*cos(f*x + e)^2 - 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) + 16*b^2*sqr
t(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*sin(f*x + e))/(f*cos(f*
x + e)), 1/32*(6*sqrt(b*d)*b^2*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^
2 + (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4
)*sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b*d*cos
(f*x + e)^2 - b*d + (b*d*cos(f*x + e) + b*d)*sin(f*x + e)))*cos(f*x + e) +
3*sqrt(b*d)*b^2*cos(f*x + e)*log((b*d*cos(f*x + e)^4 - 72*b*d*cos(f*x + e)^
2 + 8*(7*cos(f*x + e)^3 + (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) -
8*cos(f*x + e))*sqrt(b*d)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x
+ e)) + 72*b*d - 28*(b*d*cos(f*x + e)^2 - 2*b*d)*sin(f*x + e))/(cos(f*x + e
)^4 - 8*cos(f*x + e)^2 + 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) + 16*b^2
*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*sin(f*x + e))/(f*co
s(f*x + e))]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.64, size = 602, normalized size = 3.56

$$-\frac{\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\left(3i\left(\cos^2\left(fx+e\right)\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i(-}{}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/8/f*(b*sin(f*x+e)/cos(f*x+e))^(5/2)*(d/cos(f*x+e))^(1/2)*cos(f*x+e)*(3*I
*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e
)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*Ell
ipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2
))-3*I*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos
(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/
2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*
2^(1/2))-3*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I
*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))
^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,
1/2*2^(1/2))-3*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*
(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x
+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/
2*I,1/2*2^(1/2))-2*cos(f*x+e)*2^(1/2)+2*2^(1/2))/(-1+cos(f*x+e))/sin(f*x+e)
*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d\sec\left(fx+e\right)}\,\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))*(b*tan(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(b\tan\left(e+f\,x\right)\right)}^{5/2}\,\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(1/2),x)
```

```
[Out] int((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(1/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/2)*(b*tan(f*x+e))**(5/2),x)
[Out] Timed out
```

3.310 $\int \frac{(b\tan(e+fx))^{5/2}}{\sqrt{d\sec(e+fx)}}\,dx$

Optimal. Leaf size=88

$$\frac{b(b\tan(e+fx))^{3/2}}{f\sqrt{d\sec(e+fx)}}-\frac{3b^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}$$

```
[Out] 3*b^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Ellipti
cE(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/f/(d*sec(f*x+e))
^(1/2)/sin(f*x+e)^(1/2)+b*(b*tan(f*x+e))^(3/2)/f/(d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2611, 2616, 2640, 2639}

$$\frac{b(b\tan(e+fx))^{3/2}}{f\sqrt{d\sec(e+fx)}}-\frac{3b^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(5/2)/Sqrt[d*Sec[e + f*x]],x]
```

```
[Out] (-3*b^2*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(f*Sqrt[d*Se
c[e + f*x]]*Sqrt[Sin[e + f*x]]) + (b*(b*Tan[e + f*x])^(3/2))/(f*Sqrt[d*Sec[
e + f*x]])
```

Rule 2611

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*(
m + n - 1)), x] - Dist[(b^2*(n - 1))/(m + n - 1), Int[(a*Sec[e + f*x])^m*(b
*Tan[e + f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && GtQ[n, 1] &&
 NeQ[m + n - 1, 0] && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b\tan(e+fx))^{5/2}}{\sqrt{d\sec(e+fx)}}\,dx &= \frac{b(b\tan(e+fx))^{3/2}}{f\sqrt{d\sec(e+fx)}} - \frac{1}{2}\left(3b^2\right)\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx \\
&= \frac{b(b\tan(e+fx))^{3/2}}{f\sqrt{d\sec(e+fx)}} - \frac{\left(3b^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{b\sin(e+fx)}\,dx}{2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} \\
&= \frac{b(b\tan(e+fx))^{3/2}}{f\sqrt{d\sec(e+fx)}} - \frac{\left(3b^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{\sin(e+fx)}\,dx}{2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} \\
&= -\frac{3b^2E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} + \frac{b(b\tan(e+fx))^{3/2}}{f\sqrt{d\sec(e+fx)}}
\end{aligned}$$

Mathematica [C] time = 0.74, size = 74, normalized size = 0.84

$$\frac{b^3\left(3\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)+\tan^2(e+fx)\right)}{f\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(5/2)/Sqrt[d*Sec[e + f*x]],x]
```

```
[Out] (b^3*(Tan[e + f*x]^2 + 3*Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e + f*x]^2]*
(-Tan[e + f*x]^2)^(1/4)))/(f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,b^2\tan\left(fx+e\right)^2}{d\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b^2*tan(f*x + e)^2/(d*se
c(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\sqrt{d\sec\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/sqrt(d*sec(f*x + e)), x)
```

maple [C] time = 0.72, size = 585, normalized size = 6.65

$$\frac{\left(6\left(\cos^2\left(fx+e\right)\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \mathrm{EllipticE}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i(-1}{s}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(6*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*c
os(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*
x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-
3*cos(f*x+e)^2*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+
e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/s
in(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+6*cos(f
*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(
f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e)
)^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-3*cos(f*x+e)*((I
*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/s
in(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1
/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*cos(f*x+e)^2*2^(1/2)-3*
cos(f*x+e)*2^(1/2)+2^(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(5/2)*cos(f*x+e)/(d/c
os(f*x+e))^(1/2)/sin(f*x+e)^3*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\sqrt{d\sec\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^(5/2)/sqrt(d*sec(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{5/2}}{\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(1/2),x)
[Out] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(5/2)/(d*sec(f*x+e))**(1/2),x)
[Out] Timed out
```

3.311 $\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=168

$$-\frac{b^{5/2}\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{df\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{b^{5/2}\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{df\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2b(b\tan(e+fx))^{3/2}}{3f(d\sec(e+fx))^{3/2}}$$

```
[Out] -b^(5/2)*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(1/2)/d/f/(d*s
ec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)+b^(5/2)*arctanh((b*sin(f*x+e))^(1/2)/
b^(1/2))*(b*tan(f*x+e))^(1/2)/d/f/(d*sec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)
-2/3*b*(b*tan(f*x+e))^(3/2)/f/(d*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.17, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2610, 2616, 2564, 329, 298, 203, 206}

$$-\frac{b^{5/2}\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{df\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{b^{5/2}\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{df\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2b(b\tan(e+fx))^{3/2}}{3f(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(3/2),x]
```

```
[Out] -((b^(5/2)*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(d*f*
Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])) + (b^(5/2)*ArcTanh[Sqrt[b*Sin[e
 + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(d*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Si
n[e + f*x]]) - (2*b*(b*Tan[e + f*x])^(3/2))/(3*f*(d*Sec[e + f*x])^(3/2))
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{3/2}}\,dx = -\frac{2b(b\tan(e+fx))^{3/2}}{3f(d\sec(e+fx))^{3/2}} + \frac{b^2\int \sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}\,dx}{d^2}$$

$$= -\frac{2b(b\tan(e+fx))^{3/2}}{3f(d\sec(e+fx))^{3/2}} + \frac{\left(b^2\sqrt{b\tan(e+fx)}\right)\int \sec(e+fx)\sqrt{b\sin(e+fx)}\,dx}{d\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= -\frac{2b(b\tan(e+fx))^{3/2}}{3f(d\sec(e+fx))^{3/2}} + \frac{\left(b\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{\sqrt{x}}{1-\frac{x^2}{b^2}}\,dx, x, b\sin(e+fx)\right)}{df\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= -\frac{2b(b\tan(e+fx))^{3/2}}{3f(d\sec(e+fx))^{3/2}} + \frac{\left(2b\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{x^2}{1-\frac{x^4}{b^2}}\,dx, x, \sqrt{b\sin(e+fx)}\right)}{df\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= -\frac{2b(b\tan(e+fx))^{3/2}}{3f(d\sec(e+fx))^{3/2}} + \frac{\left(b^3\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int \frac{1}{b-x^2}\,dx, x, \sqrt{b\sin(e+fx)}\right)}{df\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} - \frac{(b}{}$$

$$= -\frac{b^{5/2}\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{b\tan(e+fx)}}{df\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} + \frac{b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{b\tan(e+fx)}}{df\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} -$$

Mathematica [A] time = 1.10, size = 181, normalized size = 1.08

$$\frac{\csc^3(e+fx)(b\tan(e+fx))^{5/2}\sqrt{d\sec(e+fx)}\left(-4\sin^2(e+fx)\sqrt{\sec(e+fx)}+6\sqrt[4]{\tan^2(e+fx)}\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx}}\right.\right.}{6d^2f\sec^{\frac{7}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (Csc[e + f*x]^3*Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(5/2)*(-4*Sqrt[Sec[e
+ f*x]]*Sin[e + f*x]^2 + 6*ArcTan[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)
]*(Tan[e + f*x]^2)^(1/4) + 3*(-Log[1 - Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^
(1/4)] + Log[1 + Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)])*(Tan[e + f*x]^
2)^(1/4)))/(6*d^2*f*Sec[e + f*x]^(7/2))
```

fricas [B] time = 1.13, size = 766, normalized size = 4.56

$$\left[-\frac{16\,b^{2}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+6\,b^{2}d\sqrt{-\frac{b}{d}}\arctan\left(\frac{\left(\cos\left(fx+e\right)^{3}-5\cos\left(fx+e\right)^{2}-\left(\cos\left(fx+e\right)^{2}+\right.\right.}{4\left(b\cos\right.}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/24*(16*b^2*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f
*x + e)*sin(f*x + e) + 6*b^2*d*sqrt(-b/d)*arctan(1/4*(cos(f*x + e)^3 - 5*co
s(f*x + e)^2 - (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f
*x + e) + 4)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(-b/d)*sqrt(d/cos(f*x +
e))/(b*cos(f*x + e)^2 - (b*cos(f*x + e) + b)*sin(f*x + e) - b)) - 3*b^2*d*s
qrt(-b/d)*log((b*cos(f*x + e)^4 - 72*b*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3
 - (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*
sin(f*x + e)/cos(f*x + e))*sqrt(-b/d)*sqrt(d/cos(f*x + e)) + 28*(b*cos(f*x
+ e)^2 - 2*b)*sin(f*x + e) + 72*b)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 - 4*(
cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)))/(d^2*f), -1/24*(16*b^2*sqrt(b*sin(f
*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + 6*b^
2*d*sqrt(b/d)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 + (cos(f*x + e)
^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(b*sin(f*x
+ e)/cos(f*x + e))*sqrt(b/d)*sqrt(d/cos(f*x + e))/(b*cos(f*x + e)^2 + (b*co
s(f*x + e) + b)*sin(f*x + e) - b)) - 3*b^2*d*sqrt(b/d)*log((b*cos(f*x + e)^
4 - 72*b*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 + (cos(f*x + e)^3 - 8*cos(f*x
 + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqr
t(b/d)*sqrt(d/cos(f*x + e)) - 28*(b*cos(f*x + e)^2 - 2*b)*sin(f*x + e) + 72
*b)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 + 4*(cos(f*x + e)^2 - 2)*sin(f*x + e
) + 8)))/(d^2*f)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(3/2), x)
```

maple [C] time = 0.70, size = 570, normalized size = 3.39

$$\left(3i\sqrt{\frac{i\cos(fx+e)-i+\sin(fx+e)}{\sin(fx+e)}}\,\sqrt{-\frac{i\cos(fx+e)-i-\sin(fx+e)}{\sin(fx+e)}}\ \mathrm{EllipticPi}\left(\sqrt{\frac{i\cos(fx+e)-i+\sin(fx+e)}{\sin(fx+e)}},\frac{1}{2}-\frac{i}{2},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i(-1+\cos(fx+e}{\sin(fx+e)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/6/f*(3*I*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I
-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(
f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-
3*I*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*
x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))
^(1/2),1/2+1/2*I,1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-3*((I*c
os(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin
(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/
2-1/2*I,1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-3*((I*cos(f*x+e)
-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^
(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1
/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2*cos(f*x+e)*2^(1/2)+2*2^
(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(5/2)*cos(f*x+e)/(-1+cos(f*x+e))/(d/cos(f*
x+e))^(3/2)/sin(f*x+e)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{5/2}}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(3/2),x)
[Out] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(5/2)/(d*sec(f*x+e))**(3/2),x)
[Out] Timed out
```

3.312 $\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=96

$$\frac{6b^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5d^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2b(b\tan(e+fx))^{3/2}}{5f(d\sec(e+fx))^{5/2}}$$

```
[Out] -6/5*b^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Elli
pticE(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/d^2/f/(d*sec(
f*x+e))^(1/2)/sin(f*x+e)^(1/2)-2/5*b*(b*tan(f*x+e))^(3/2)/f/(d*sec(f*x+e))^
(5/2)
```

Rubi [A] time = 0.12, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2610, 2616, 2640, 2639}

$$\frac{6b^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5d^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2b(b\tan(e+fx))^{3/2}}{5f(d\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(5/2),x]
```

```
[Out] (6*b^2*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(5*d^2*f*Sqrt
[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x]]) - (2*b*(b*Tan[e + f*x])^(3/2))/(5*f*(d
*Sec[e + f*x])^(5/2))
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{5/2}}\,dx &= -\frac{2b(b\tan(e+fx))^{3/2}}{5f(d\sec(e+fx))^{5/2}} + \frac{(3b^2)\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx}{5d^2} \\
&= -\frac{2b(b\tan(e+fx))^{3/2}}{5f(d\sec(e+fx))^{5/2}} + \frac{\left(3b^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{b\sin(e+fx)}\,dx}{5d^2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} \\
&= -\frac{2b(b\tan(e+fx))^{3/2}}{5f(d\sec(e+fx))^{5/2}} + \frac{\left(3b^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{\sin(e+fx)}\,dx}{5d^2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} \\
&= \frac{6b^2E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5d^2f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} - \frac{2b(b\tan(e+fx))^{3/2}}{5f(d\sec(e+fx))^{5/2}}
\end{aligned}$$

Mathematica [C] time = 0.77, size = 81, normalized size = 0.84

$$\frac{b^3\left(-6\sqrt[4]{-\tan^2(e+fx)}\;{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)+\cos(2(e+fx))-1\right)}{5d^2f\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(5/2),x]
```

```
[Out] (b^3*(-1 + Cos[2*(e + f*x)] - 6*Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e + f
*x]^2]*(-Tan[e + f*x]^2)^(1/4)))/(5*d^2*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e
 + f*x]])
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,b^2\tan\left(fx+e\right)^2}{d^3\sec\left(fx+e\right)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b^2*tan(f*x + e)^2/(d^3*
sec(f*x + e)^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(5/2), x)
```

maple [C] time = 0.71, size = 565, normalized size = 5.89

$$-\frac{\left(6\cos\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticE}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i\left(-1+\cdots\right.}{\sin\cdots}}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/5/f*(6*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*co
s(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x
+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-3
*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-
I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(
f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+6*(-I*(-1+
cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2
)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-
I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-3*(-I*(-1+cos(f*x+e))/sin(f*x+
e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-
sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*
x+e))^(1/2),1/2*2^(1/2))-cos(f*x+e)^3*2^(1/2)+4*cos(f*x+e)*2^(1/2)-3*2^(1/2
))*(b*sin(f*x+e)/cos(f*x+e))^(5/2)/(d/cos(f*x+e))^(5/2)/sin(f*x+e)^3*2^(1/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(5/2),x, algorithm="maxima")
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{5/2}}{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(5/2),x)
[Out] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(5/2)/(d*sec(f*x+e))**(5/2),x)
[Out] Timed out
```

3.313 $\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=34

$$\frac{2(b\tan(e+fx))^{7/2}}{7bf(d\sec(e+fx))^{7/2}}$$

```
[Out] 2/7*(b*tan(f*x+e))^(7/2)/b/f/(d*sec(f*x+e))^(7/2)
```

Rubi [A] time = 0.05, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2605}

$$\frac{2(b\tan(e+fx))^{7/2}}{7bf(d\sec(e+fx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(7/2),x]
```

```
[Out] (2*(b*Tan[e + f*x])^(7/2))/(7*b*f*(d*Sec[e + f*x])^(7/2))
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{7/2}}\,dx = \frac{2(b\tan(e+fx))^{7/2}}{7bf(d\sec(e+fx))^{7/2}}$$

Mathematica [A] time = 0.16, size = 45, normalized size = 1.32

$$\frac{2b^2\sin^3(e+fx)\sqrt{b\tan(e+fx)}}{7d^3f\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(7/2),x]
```

```
[Out] (2*b^2*Sin[e + f*x]^3*Sqrt[b*Tan[e + f*x]])/(7*d^3*f*Sqrt[d*Sec[e + f*x]])
```

fricas [B] time = 0.74, size = 68, normalized size = 2.00

$$-\frac{2\left(b^{2}\cos\left(fx+e\right)^{3}-b^{2}\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)}{7\,d^{4}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(7/2),x, algorithm="fricas")
```

```
[Out] -2/7*(b^2*cos(f*x + e)^3 - b^2*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x +
e))*sqrt(d/cos(f*x + e))*sin(f*x + e)/(d^4*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(7/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(7/2), x)
```

maple [A] time = 0.56, size = 50, normalized size = 1.47

$$\frac{2\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\sin\left(fx+e\right)}{7f\cos\left(fx+e\right)\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(7/2),x)
```

```
[Out] 2/7/f*(b*sin(f*x+e)/cos(f*x+e))^(5/2)*sin(f*x+e)/cos(f*x+e)/(d/cos(f*x+e))^
(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(7/2), x)
```

mupad [B] time = 3.21, size = 72, normalized size = 2.12

$$\frac{b^2\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\,\left(2\,\sin\left(2\,e+2\,f\,x\right)-\sin\left(4\,e+4\,f\,x\right)\right)\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}{28\,d^4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(7/2),x)
```

```
[Out] (b^2*(d/cos(e + f*x))^(1/2)*(2*sin(2*e + 2*f*x) - sin(4*e + 4*f*x))*((b*sin
(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))/(28*d^4*f)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(5/2)/(d*sec(f*x+e))**(7/2),x)
```

```
[Out] Timed out
```

3.314 $\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=131

$$\frac{4b^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{15d^4f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{2b(b\tan(e+fx))^{3/2}}{15d^2f(d\sec(e+fx))^{5/2}}-\frac{2b(b\tan(e+fx))^{3/2}}{9f(d\sec(e+fx))^{9/2}}$$

```
[Out] -4/15*b^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Ell
ipticE(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/d^4/f/(d*sec
(f*x+e))^(1/2)/sin(f*x+e)^(1/2)-2/9*b*(b*tan(f*x+e))^(3/2)/f/(d*sec(f*x+e))
^(9/2)+2/15*b*(b*tan(f*x+e))^(3/2)/d^2/f/(d*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.18, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2610, 2612, 2616, 2640, 2639}

$$\frac{4b^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{15d^4f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}+\frac{2b(b\tan(e+fx))^{3/2}}{15d^2f(d\sec(e+fx))^{5/2}}-\frac{2b(b\tan(e+fx))^{3/2}}{9f(d\sec(e+fx))^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(9/2),x]
```

```
[Out] (4*b^2*EllipticE[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(15*d^4*f*Sqr
t[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x]]) - (2*b*(b*Tan[e + f*x])^(3/2))/(9*f*(
d*Sec[e + f*x])^(9/2)) + (2*b*(b*Tan[e + f*x])^(3/2))/(15*d^2*f*(d*Sec[e +
f*x])^(5/2))
```

Rule 2610

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Simp[(b*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n - 1))/(f*m)
, x] - Dist[(b^2*(n - 1))/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e +
f*x])^(n - 2), x], x] /; FreeQ[{a, b, e, f}, x] && GtQ[n, 1] && (LtQ[m, -1]
 || (EqQ[m, -1] && EqQ[n, 3/2])) && IntegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
```

```
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\int \frac{(b\tan(e+fx))^{5/2}}{(d\sec(e+fx))^{9/2}}\,dx = -\frac{2b(b\tan(e+fx))^{3/2}}{9f(d\sec(e+fx))^{9/2}} + \frac{b^2\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{5/2}}\,dx}{3d^2}$$

$$= -\frac{2b(b\tan(e+fx))^{3/2}}{9f(d\sec(e+fx))^{9/2}} + \frac{2b(b\tan(e+fx))^{3/2}}{15d^2f(d\sec(e+fx))^{5/2}} + \frac{\left(2b^2\right)\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx}{15d^4}$$

$$= -\frac{2b(b\tan(e+fx))^{3/2}}{9f(d\sec(e+fx))^{9/2}} + \frac{2b(b\tan(e+fx))^{3/2}}{15d^2f(d\sec(e+fx))^{5/2}} + \frac{\left(2b^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{b\sin(e+}}{15d^4\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+}}$$

$$= -\frac{2b(b\tan(e+fx))^{3/2}}{9f(d\sec(e+fx))^{9/2}} + \frac{2b(b\tan(e+fx))^{3/2}}{15d^2f(d\sec(e+fx))^{5/2}} + \frac{\left(2b^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{\sin(e+f}}{15d^4\sqrt{d\sec(e+fx)}\sqrt{\sin(e+f}}$$

$$= \frac{4b^2E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{15d^4f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} - \frac{2b(b\tan(e+fx))^{3/2}}{9f(d\sec(e+fx))^{9/2}} + \frac{2b(b\tan(e+fx))}{15d^2f(d\sec(e+fx}$$

Mathematica [C] time = 0.99, size = 99, normalized size = 0.76

$$-\frac{b^2\sin(2(e+fx))\sqrt{b\tan(e+fx)}\left(12\sqrt[4]{-\tan^2(e+fx)}\csc^2(e+fx)\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)+5\cos(2(e+fx}{90d^4f\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Tan[e + f*x])^(5/2)/(d*Sec[e + f*x])^(9/2),x]
```

```
[Out] -1/90*(b^2*Sin[2*(e + f*x)]*Sqrt[b*Tan[e + f*x]]*(-1 + 5*Cos[2*(e + f*x)] +
 12*Csc[e + f*x]^2*Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e + f*x]^2]*(-Tan[
e + f*x]^2)^(1/4)))/(d^4*f*Sqrt[d*Sec[e + f*x]])
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}b^2\tan\left(fx+e\right)^2}{d^5\sec\left(fx+e\right)^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(9/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*b^2*tan(f*x + e)^2/(d^5*
sec(f*x + e)^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(9/2),x, algorithm="giac")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(9/2), x)
```

maple [C] time = 0.65, size = 586, normalized size = 4.47

$$\left(5\sqrt{2}\,\left(\cos^5\left(fx+e\right)\right)+6\cos\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\;\text{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i-}{\sin\left(fx\right.}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(9/2),x)
```

```
[Out] 1/45/f*(5*2^(1/2)*cos(f*x+e)^5+6*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/si
n(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF((
(I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+
e))/sin(f*x+e))^(1/2)-12*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e)
)^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f
*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(
f*x+e))^(1/2)-8*cos(f*x+e)^3*2^(1/2)+6*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2
)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+
e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1
/2),1/2*2^(1/2))-12*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+
sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/
2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-3*
cos(f*x+e)*2^(1/2)+6*2^(1/2))*(b*sin(f*x+e)/cos(f*x+e))^(5/2)/cos(f*x+e)^2/
sin(f*x+e)^3/(d/cos(f*x+e))^(9/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))^(5/2)/(d*sec(f*x+e))^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((b*tan(f*x + e))^(5/2)/(d*sec(f*x + e))^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(b\tan\left(e+f\,x\right)\right)^{5/2}}{{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(9/2),x)
```

```
[Out] int((b*tan(e + f*x))^(5/2)/(d/cos(e + f*x))^(9/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*tan(f*x+e))**(5/2)/(d*sec(f*x+e))**(9/2),x)
```

```
[Out] Timed out
```

3.315 $\int \frac{(d\sec(e+fx))^{7/2}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=178

$$\frac{3d^3\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4\sqrt{b}f\sqrt{b\tan(e+fx)}}+\frac{3d^3\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4\sqrt{b}f\sqrt{b\tan(e+fx)}}$$

```
[Out] 3/4*d^3*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*(d*sec(f*x+e))^(1/2)*(b*sin(f*
x+e))^(1/2)/f/b^(1/2)/(b*tan(f*x+e))^(1/2)+3/4*d^3*arctanh((b*sin(f*x+e))^(
1/2)/b^(1/2))*(d*sec(f*x+e))^(1/2)*(b*sin(f*x+e))^(1/2)/f/b^(1/2)/(b*tan(f*
x+e))^(1/2)+1/2*d^2*(d*sec(f*x+e))^(3/2)*(b*tan(f*x+e))^(1/2)/b/f
```

Rubi [A] time = 0.17, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2613, 2616, 2564, 329, 212, 206, 203}

$$\frac{d^2\sqrt{b\tan(e+fx)}(d\sec(e+fx))^{3/2}}{2bf}+\frac{3d^3\sqrt{b\sin(e+fx)}\sqrt{d\sec(e+fx)}\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{4\sqrt{b}f\sqrt{b\tan(e+fx)}}+\frac{3d^3\sqrt{b\sin(e+fx)}}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(7/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (3*d^3*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin
[e + f*x]])/(4*Sqrt[b]*f*Sqrt[b*Tan[e + f*x]]) + (3*d^3*ArcTanh[Sqrt[b*Sin[
e + f*x]]/Sqrt[b]]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])/(4*Sqrt[b]*f*
Sqrt[b*Tan[e + f*x]]) + (d^2*(d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]])/(
2*b*f)
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \frac{(d\sec(e+fx))^{7/2}}{\sqrt{b\tan(e+fx)}}\,dx = \frac{d^2(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2bf} + \frac{1}{4}\left(3d^2\right)\int \frac{(d\sec(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx$$

$$= \frac{d^2(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2bf} + \frac{\left(3d^3\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\int \frac{\sec(e+f}{\sqrt{b\sin(e+}}}{4\sqrt{b\tan(e+fx)}}$$

$$= \frac{d^2(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2bf} + \frac{\left(3d^3\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int\right.}{4bf\sqrt{b\tan(e+fx}}$$

$$= \frac{d^2(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2bf} + \frac{\left(3d^3\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int\right.}{2bf\sqrt{b\tan(e+fx)}}$$

$$= \frac{d^2(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}{2bf} + \frac{\left(3d^3\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int\right.}{4f\sqrt{b\tan(e+fx)}}$$

$$= \frac{3d^3\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}}{4\sqrt{b}\,f\sqrt{b\tan(e+fx)}} + \frac{3d^3\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{}}{4\sqrt{b}\,f\sqrt{b\,t}}$$

<u>Mathematica</u> [A] time = 6.51, size = 136, normalized size = 0.76

$$\frac{d^3\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}\left(2\sqrt[4]{\tan^2(e+fx)}\,\sec^{\frac{3}{2}}(e+fx) - 3\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right) + 3\tanh^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx}}\right.\right.}{4bf\sqrt[4]{\tan^2(e+fx)}\,\sqrt{\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(7/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (d^3*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]]*(-3*ArcTan[Sqrt[Sec[e + f*x]
]/(Tan[e + f*x]^2)^(1/4)] + 3*ArcTanh[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(
1/4)] + 2*Sec[e + f*x]^(3/2)*(Tan[e + f*x]^2)^(1/4)))/(4*b*f*Sqrt[Sec[e + f
*x]]*(Tan[e + f*x]^2)^(1/4))
```

fricas [B] time = 0.81, size = 782, normalized size = 4.39

$$\left[-\frac{6\,bd^3\sqrt{-\frac{d}{b}}\,\arctan\left(\frac{\left(\cos\left(fx+e\right)^3-5\,\cos\left(fx+e\right)^2-\left(\cos\left(fx+e\right)^2+6\,\cos\left(fx+e\right)+4\right)\sin\left(fx+e\right)-2\,\cos\left(fx+e\right)+4\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{-\frac{d}{b}}\,\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{4\left(d\cos\left(fx+e\right)^2-\left(d\cos\left(fx+e\right)+d\right)\sin\left(fx+e\right)-d\right)}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/32*(6*b*d^3*sqrt(-d/b)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 -
(cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sq
rt(b*sin(f*x + e)/cos(f*x + e))*sqrt(-d/b)*sqrt(d/cos(f*x + e))/(d*cos(f*x
+ e)^2 - (d*cos(f*x + e) + d)*sin(f*x + e) - d))*cos(f*x + e) - 3*b*d^3*sqr
t(-d/b)*cos(f*x + e)*log((d*cos(f*x + e)^4 - 72*d*cos(f*x + e)^2 + 8*(7*cos
(f*x + e)^3 - (cos(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x +
e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(-d/b)*sqrt(d/cos(f*x + e)) + 28*
(d*cos(f*x + e)^2 - 2*d)*sin(f*x + e) + 72*d)/(cos(f*x + e)^4 - 8*cos(f*x +
 e)^2 - 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)) - 16*d^3*sqrt(b*sin(f*x +
 e)/cos(f*x + e))*sqrt(d/cos(f*x + e)))/(b*f*cos(f*x + e)), 1/32*(6*b*d^3*s
qrt(d/b)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 + (cos(f*x + e)^2 +
6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(b*sin(f*x + e)/
cos(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e))/(d*cos(f*x + e)^2 + (d*cos(f*x
 + e) + d)*sin(f*x + e) - d))*cos(f*x + e) + 3*b*d^3*sqrt(d/b)*cos(f*x + e)
*log((d*cos(f*x + e)^4 - 72*d*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 + (cos(f
*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x +
 e)/cos(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e)) - 28*(d*cos(f*x + e)^2 - 2
*d)*sin(f*x + e) + 72*d)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 + 4*(cos(f*x +
e)^2 - 2)*sin(f*x + e) + 8)) + 16*d^3*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqr
t(d/cos(f*x + e)))/(b*f*cos(f*x + e))]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(7/2)/sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.65, size = 758, normalized size = 4.26

$$\frac{\left(6i\sqrt{\frac{i\cos(fx+e)-i+\sin(fx+e)}{\sin(fx+e)}}\,\sqrt{-\frac{i\cos(fx+e)-i-\sin(fx+e)}{\sin(fx+e)}}\,\sqrt{-\frac{i(-1+\cos(fx+e))}{\sin(fx+e)}}\,\mathrm{EllipticF}\left(\sqrt{\frac{i\cos(fx+e)-i+\sin(fx+e)}{\sin(fx+e)}},\frac{\sqrt{2}}{2}\right)(\mathrm{co}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/8/f*(6*I*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I
-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*Ellipt
icF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*cos(f*x+e)^
2*sin(f*x+e)-3*I*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*
x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*
EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(
1/2))*cos(f*x+e)^2*sin(f*x+e)-3*I*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^
(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/s
in(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),
1/2+1/2*I,1/2*2^(1/2))*cos(f*x+e)^2*sin(f*x+e)+3*cos(f*x+e)^2*sin(f*x+e)*((
I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/
sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(
f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))-3*cos(f*x+e)^
2*sin(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)
-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*Elli
pticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2)
)+2*cos(f*x+e)*2^(1/2)-2*2^(1/2))*(d/cos(f*x+e))^(7/2)*sin(f*x+e)*cos(f*x+e
)/(-1+cos(f*x+e))/(b*sin(f*x+e)/cos(f*x+e))^(1/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(7/2)/sqrt(b*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{7/2}}{\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(7/2)/(b*tan(e + f*x))^(1/2),x)
[Out] int((d/cos(e + f*x))^(7/2)/(b*tan(e + f*x))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(7/2)/(b*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.316 $\int \frac{(d\sec(e+fx))^{5/2}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=92

$$\frac{d^2\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}{bf}+\frac{d^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

```
[Out] -d^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Elliptic
F(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1/2)/
f/(b*tan(f*x+e))^(1/2)+d^2*(d*sec(f*x+e))^(1/2)*(b*tan(f*x+e))^(1/2)/b/f
```

Rubi [A] time = 0.11, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2613, 2616, 2642, 2641}

$$\frac{d^2\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}{bf}+\frac{d^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(5/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (d^2*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x
]])/(f*Sqrt[b*Tan[e + f*x]]) + (d^2*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x
]])/(b*f)
```

Rule 2613

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(m + n - 1)), x] + Dist[(a^2*(m - 2))/(m + n - 1), Int[(a*Sec[e +
f*x])^(m - 2)*(b*Tan[e + f*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (G
tQ[m, 1] || (EqQ[m, 1] && EqQ[n, 1/2])) && NeQ[m + n - 1, 0] && IntegersQ[2
*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{(d\sec(e+fx))^{5/2}}{\sqrt{b\tan(e+fx)}}\,dx &= \frac{d^2\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}{bf}+\frac{1}{2}d^2\int \frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx\\ &= \frac{d^2\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}{bf}+\frac{\left(d^2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}\right)\int \frac{1}{\sqrt{b\sin(e+fx)}}\,dx}{2\sqrt{b\tan(e+fx)}}\\ &= \frac{d^2\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}{bf}+\frac{\left(d^2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}\right)\int \frac{1}{\sqrt{\sin(e+fx)}}\,dx}{2\sqrt{b\tan(e+fx)}}\\ &= \frac{d^2F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}{f\sqrt{b\tan(e+fx)}}+\frac{d^2\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}{bf}\end{aligned}$$

Mathematica [C] time = 2.36, size = 83, normalized size = 0.90

$$\frac{d^2\sqrt{d\sec(e+fx)}\left(\sin(e+fx)\cos(e+fx)\sec^2(e+fx)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};-\tan^2(e+fx)\right)+\tan(e+fx)\right)}{f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(5/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (d^2*Sqrt[d*Sec[e + f*x]]*(Cos[e + f*x]*Hypergeometric2F1[1/4, 3/4, 5/4, -T
an[e + f*x]^2]*(Sec[e + f*x]^2)^(3/4)*Sin[e + f*x] + Tan[e + f*x]))/(f*Sqrt
[b*Tan[e + f*x]])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,d^2\sec\left(fx+e\right)^2}{b\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*d^2*sec(f*x + e)^2/(b*ta
n(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(5/2)/sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.64, size = 208, normalized size = 2.26

$$-\frac{\left(i\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)}{2f\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{b\,s}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/2/f*(I*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*cos(f*x+e)*sin(f*x+e)*(-(I*
cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f
*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+
e))^(1/2)-cos(f*x+e)*2^(1/2)+2^(1/2))*(d/cos(f*x+e))^(5/2)*sin(f*x+e)*cos(f
*x+e)/(-1+cos(f*x+e))/(b*sin(f*x+e)/cos(f*x+e))^(1/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(5/2)/sqrt(b*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{d}{\cos(e+f\,x)}\right)^{5/2}}{\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(5/2)/(b*tan(e + f*x))^(1/2),x)
[Out] int((d/cos(e + f*x))^(5/2)/(b*tan(e + f*x))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(5/2)/(b*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.317 $\int \frac{(d\sec(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=131

$$\frac{d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{\sqrt{b}\,f\sqrt{b\tan(e+fx)}}+\frac{d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{\sqrt{b}\,f\sqrt{b\tan(e+fx)}}$$

```
[Out] d*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*(d*sec(f*x+e))^(1/2)*(b*sin(f*x+e))^
(1/2)/f/b^(1/2)/(b*tan(f*x+e))^(1/2)+d*arctanh((b*sin(f*x+e))^(1/2)/b^(1/2)
)*(d*sec(f*x+e))^(1/2)*(b*sin(f*x+e))^(1/2)/f/b^(1/2)/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {2616, 2564, 329, 212, 206, 203}

$$\frac{d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{\sqrt{b}\,f\sqrt{b\tan(e+fx)}}+\frac{d\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{\sqrt{b}\,f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(3/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (d*ArcTan[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e +
 f*x]])/(Sqrt[b]*f*Sqrt[b*Tan[e + f*x]]) + (d*ArcTanh[Sqrt[b*Sin[e + f*x]]/
Sqrt[b]]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])/(Sqrt[b]*f*Sqrt[b*Tan[e
 + f*x]])
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
```

```
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \frac{(d\sec(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx = \frac{\left(d\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\int \frac{\sec(e+fx)}{\sqrt{b\sin(e+fx)}}\,dx}{\sqrt{b\tan(e+fx)}}$$

$$= \frac{\left(d\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\left(1-\frac{x^2}{b^2}\right)}\,dx, x, b\sin(e+fx)\right)}{bf\sqrt{b\tan(e+fx)}}$$

$$= \frac{\left(2d\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int \frac{1}{1-\frac{x^4}{b^2}}\,dx, x, \sqrt{b\sin(e+fx)}\right)}{bf\sqrt{b\tan(e+fx)}}$$

$$= \frac{\left(d\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int \frac{1}{b-x^2}\,dx, x, \sqrt{b\sin(e+fx)}\right)}{f\sqrt{b\tan(e+fx)}} + \frac{\left(d\sqrt{d\sec(e\right.}{}}{}$$

$$= \frac{d\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}}{\sqrt{b}\,f\sqrt{b\tan(e+fx)}} + \frac{d\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{d\sec}}{\sqrt{b}\,f\sqrt{b\tan(}}$$

<u>Mathematica</u> [A] time = 4.42, size = 105, normalized size = 0.80

$$-\frac{\sqrt{b\tan(e+fx)}\,(d\sec(e+fx))^{3/2}\left(\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)-\tanh^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)\right)}{bf\sqrt[4]{\tan^2(e+fx)}\,\sec^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(3/2)/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] -(((ArcTan[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)] - ArcTanh[Sqrt[Sec[e
+ f*x]]/(Tan[e + f*x]^2)^(1/4)])*(d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]
])/(b*f*Sec[e + f*x]^(3/2)*(Tan[e + f*x]^2)^(1/4)))
```

fricas [B] time = 1.22, size = 653, normalized size = 4.98

$$\left[-\frac{2\,d\sqrt{-\frac{d}{b}}\ \arctan\left(\frac{\left(\cos\left(fx+e\right)^{3}-5\,\cos\left(fx+e\right)^{2}-\left(\cos\left(fx+e\right)^{2}+6\,\cos\left(fx+e\right)+4\right)\sin\left(fx+e\right)-2\,\cos\left(fx+e\right)+4\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\ \sqrt{-\frac{d}{b}}\ \sqrt{\frac{d}{\cos\left(fx+e\right)}}}{4\left(d\cos\left(fx+e\right)^{2}-\left(d\cos\left(fx+e\right)+d\right)\sin\left(fx+e\right)-d\right)}\right)-\cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(2*d*sqrt(-d/b)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 - (cos(
f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(b*
sin(f*x + e)/cos(f*x + e))*sqrt(-d/b)*sqrt(d/cos(f*x + e))/(d*cos(f*x + e)^
2 - (d*cos(f*x + e) + d)*sin(f*x + e) - d)) - d*sqrt(-d/b)*log((d*cos(f*x +
 e)^4 - 72*d*cos(f*x + e)^2 + 8*(7*cos(f*x + e)^3 - (cos(f*x + e)^3 - 8*cos
(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))
*sqrt(-d/b)*sqrt(d/cos(f*x + e)) + 28*(d*cos(f*x + e)^2 - 2*d)*sin(f*x + e)
 + 72*d)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 - 4*(cos(f*x + e)^2 - 2)*sin(f*
x + e) + 8)))/f, 1/8*(2*d*sqrt(d/b)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x
+ e)^2 + (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e
) + 4)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e))/(d*
cos(f*x + e)^2 + (d*cos(f*x + e) + d)*sin(f*x + e) - d)) + d*sqrt(d/b)*log(
(d*cos(f*x + e)^4 - 72*d*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 + (cos(f*x +
e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x + e)/c
os(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e)) - 28*(d*cos(f*x + e)^2 - 2*d)*s
in(f*x + e) + 72*d)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 + 4*(cos(f*x + e)^2
- 2)*sin(f*x + e) + 8)))/f]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)/sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.63, size = 344, normalized size = 2.63

$$\frac{\sqrt{2}\left(2i\,\mathrm{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)-i\,\mathrm{EllipticPi}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{1}{2}+\frac{i}{2},\frac{\sqrt{2}}{2}\right)-i\,\mathrm{EllipticPi}\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*2^(1/2)*(2*I*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)
,1/2*2^(1/2))-I*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1
/2+1/2*I,1/2*2^(1/2))-I*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))
^(1/2),1/2-1/2*I,1/2*2^(1/2))-EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f
*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))+EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))
/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2)))*cos(f*x+e)*((I*cos(f*x+e)-I+sin(
f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*(
d/cos(f*x+e))^(3/2)*sin(f*x+e)^2*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)/(-1+
cos(f*x+e))/(b*sin(f*x+e)/cos(f*x+e))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\sqrt{b \tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)/sqrt(b*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\sqrt{b\,\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(3/2)/(b*tan(e + f*x))^(1/2),x)
```

```
[Out] int((d/cos(e + f*x))^(3/2)/(b*tan(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \sec \left(e+fx\right)\right)^{\frac{3}{2}}}{\sqrt{b \tan \left(e+fx\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(3/2)/(b*tan(f*x+e))**(1/2),x)
[Out] Integral((d*sec(e + f*x))**(3/2)/sqrt(b*tan(e + f*x)), x)
```

3.318 $\int \frac{\sqrt{d \sec(e+fx)}}{\sqrt{b \tan(e+fx)}} \, dx$

Optimal. Leaf size=55

$$\frac{2\sqrt{\sin(e+fx)}F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

```
[Out] -2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticF(
cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1/2)/f/
(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2616, 2642, 2641}

$$\frac{2\sqrt{\sin(e+fx)}F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{f\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Sec[e + f*x]]/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (2*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x]]
)/(f*Sqrt[b*Tan[e + f*x]])
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx &= \frac{\left(\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\int \frac{1}{\sqrt{b\sin(e+fx)}}\,dx}{\sqrt{b\tan(e+fx)}}\\ &= \frac{\left(\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}\right)\int \frac{1}{\sqrt{\sin(e+fx)}}\,dx}{\sqrt{b\tan(e+fx)}}\\ &= \frac{2F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}{f\sqrt{b\tan(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.46, size = 89, normalized size = 1.62

$$\frac{2\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)}{bf\sqrt{\sec(e+fx)}\,\sqrt{\cos^2\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Sec[e + f*x]]/Sqrt[b*Tan[e + f*x]],x]
```

```
[Out] (2*Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[(e + f*x)/2]^2]*Sqrt[d*Sec[e + f*x
]]*Sqrt[b*Tan[e + f*x]])/(b*f*Sqrt[Sec[e + f*x]]*Sqrt[Cos[(e + f*x)/2]^2*Se
c[e + f*x]])
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\,\sqrt{b\tan\left(fx+e\right)}}{b\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(b*tan(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\sec\left(fx+e\right)}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))/sqrt(b*tan(f*x + e)), x)
```

maple [C] time = 0.63, size = 175, normalized size = 3.18

$$-\frac{i\,\mathrm{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{\frac{}{\mathrm{co}}}}{f\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -I/f*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*
(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x
+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(d/cos(f*x+e))^(1
/2)*sin(f*x+e)^2*2^(1/2)/(-1+cos(f*x+e))/(b*sin(f*x+e)/cos(f*x+e))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\sec\left(fx+e\right)}}{\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))/sqrt(b*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}{\sqrt{b\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(1/2)/(b*tan(e + f*x))^(1/2),x)
```

```
[Out] int((d/cos(e + f*x))^(1/2)/(b*tan(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d \sec\left(e+fx\right)}}{\sqrt{b \tan\left(e+fx\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(d*sec(e + f*x))/sqrt(b*tan(e + f*x)), x)
```

3.319 $\int \frac{1}{\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=32

$$\frac{2\sqrt{b\tan(e+fx)}}{bf\sqrt{d\sec(e+fx)}}$$

```
[Out] 2*(b*tan(f*x+e))^(1/2)/b/f/(d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2605}

$$\frac{2\sqrt{b\tan(e+fx)}}{bf\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (2*Sqrt[b*Tan[e + f*x]])/(b*f*Sqrt[d*Sec[e + f*x]])
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}\,dx = \frac{2\sqrt{b\tan(e+fx)}}{bf\sqrt{d\sec(e+fx)}}$$

Mathematica [A] time = 0.40, size = 32, normalized size = 1.00

$$\frac{2\sqrt{b\tan(e+fx)}}{bf\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (2*Sqrt[b*Tan[e + f*x]])/(b*f*Sqrt[d*Sec[e + f*x]])
```

fricas [A] time = 0.59, size = 47, normalized size = 1.47

$$\frac{2 \sqrt{\frac{b \sin\left(fx+e\right)}{\cos\left(fx+e\right)}} \sqrt{\frac{d}{\cos\left(fx+e\right)}} \cos\left(fx+e\right)}{bdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f*x + e)/(b*d*
f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d \sec\left(fx+e\right)} \sqrt{b \tan\left(fx+e\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))), x)
```

maple [A] time = 0.59, size = 50, normalized size = 1.56

$$\frac{2 \sin\left(fx+e\right)}{f \sqrt{\frac{d}{\cos\left(fx+e\right)}} \sqrt{\frac{b \sin\left(fx+e\right)}{\cos\left(fx+e\right)}} \cos\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/f*sin(f*x+e)/(d/cos(f*x+e))^(1/2)/(b*sin(f*x+e)/cos(f*x+e))^(1/2)/cos(f*x
+e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d \sec\left(fx+e\right)} \sqrt{b \tan\left(fx+e\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))), x)
```

mupad [B] time = 2.90, size = 52, normalized size = 1.62

$$\frac{2\,\sin\left(e+f\,x\right)\,\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}{d\,f\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(1/2)),x)
```

```
[Out] (2*sin(e + f*x)*(d/cos(e + f*x))^(1/2))/(d*f*((b*sin(2*e + 2*f*x))/(cos(2*e
 + 2*f*x) + 1))^(1/2))
```

sympy [A] time = 19.00, size = 51, normalized size = 1.59

$$\begin{cases} \frac{2\sqrt{\tan\left(e+fx\right)}}{\sqrt{b}\,\sqrt{d}\,f\sqrt{\sec\left(e+fx\right)}} & \text{for}\ f\neq 0 \\ \frac{x}{\sqrt{b\tan\left(e\right)}\,\sqrt{d\sec\left(e\right)}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(1/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Piecewise((2*sqrt(tan(e + f*x))/(sqrt(b)*sqrt(d)*f*sqrt(sec(e + f*x))), Ne(
f, 0)), (x/(sqrt(b*tan(e))*sqrt(d*sec(e))), True))
```

3.320 $\int \frac{1}{(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=95

$$\frac{4\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3d^2f\sqrt{b\tan(e+fx)}}+\frac{2\sqrt{b\tan(e+fx)}}{3bf(d\sec(e+fx))^{3/2}}$$

```
[Out] -4/3*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Elliptic
F(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1/2)/
d^2/f/(b*tan(f*x+e))^(1/2)+2/3*(b*tan(f*x+e))^(1/2)/b/f/(d*sec(f*x+e))^(3/2
)
```

Rubi [A] time = 0.12, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2612, 2616, 2642, 2641}

$$\frac{4\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3d^2f\sqrt{b\tan(e+fx)}}+\frac{2\sqrt{b\tan(e+fx)}}{3bf(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (4*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x]]
)/(3*d^2*f*Sqrt[b*Tan[e + f*x]]) + (2*Sqrt[b*Tan[e + f*x]])/(3*b*f*(d*Sec[e
 + f*x])^(3/2))
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}}\,dx &= \frac{2\sqrt{b\tan(e+fx)}}{3bf(d\sec(e+fx))^{3/2}}+\frac{2\int \frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx}{3d^2}\\
&= \frac{2\sqrt{b\tan(e+fx)}}{3bf(d\sec(e+fx))^{3/2}}+\frac{\left(2\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\int \frac{1}{\sqrt{b\sin(e+
\end{aligned}$$

$$\begin{aligned}
&= \frac{2\sqrt{b\tan(e+fx)}}{3bf(d\sec(e+fx))^{3/2}}+\frac{\left(2\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}\right)\int \frac{1}{\sqrt{\sin(e+fx)}}}{3d^2\sqrt{b\tan(e+fx)}}\\
&= \frac{4F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}{3d^2f\sqrt{b\tan(e+fx)}}+\frac{2\sqrt{b\tan(e+}{3bf(d\sec(e+}
\end{aligned}$$

Mathematica [C] time = 1.01, size = 91, normalized size = 0.96

$$\frac{2\sqrt{b\tan(e+fx)}\left(\sqrt[4]{-\tan^2(e+fx)}-2\sec^2(e+fx)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\sec^2(e+fx)\right)\right)}{3bf\sqrt[4]{-\tan^2(e+fx)}\,(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (2*Sqrt[b*Tan[e + f*x]]*(-2*Hypergeometric2F1[1/4, 3/4, 5/4, Sec[e + f*x]^2
]*Sec[e + f*x]^2 + (-Tan[e + f*x]^2)^(1/4)))/(3*b*f*(d*Sec[e + f*x])^(3/2)*
(-Tan[e + f*x]^2)^(1/4))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{bd^2\sec\left(fx+e\right)^2\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(b*d^2*sec(f*x + e)^2*ta
n(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d \sec \left(fx+e\right)\right)^{\frac{3}{2}} \sqrt{b \tan \left(fx+e\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*sec(f*x + e))^(3/2)*sqrt(b*tan(f*x + e))), x)
```

maple [C] time = 0.64, size = 213, normalized size = 2.24

$$-\frac{\left(2 i \sin \left(fx+e\right) \sqrt{-\frac{i\left(-1+\cos \left(fx+e\right)\right)}{\sin \left(fx+e\right)}}\, \sqrt{\frac{i \cos \left(fx+e\right)-i+\sin \left(fx+e\right)}{\sin \left(fx+e\right)}}\, \sqrt{-\frac{i \cos \left(fx+e\right)-i-\sin \left(fx+e\right)}{\sin \left(fx+e\right)}}\, \mathrm{EllipticF}\left(\sqrt{\frac{i \cos \left(fx+e\right)-i+\sin \left(f\right.}{\sin \left(fx+e\right)}}\right.\right.}{3 f \left(-1+\cos \left(fx+e\right)\right) \cos \left(fx+e\right)^{2} \left(\frac{d}{\cos \left(fx+e\right)}\right)^{\frac{3}{2}} \sqrt{\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] -1/3/f*(2*I*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)
-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^
(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))
-cos(f*x+e)^2*2^(1/2)+cos(f*x+e)*2^(1/2))*sin(f*x+e)/(-1+cos(f*x+e))/cos(f*
x+e)^2/(d/cos(f*x+e))^(3/2)/(b*sin(f*x+e)/cos(f*x+e))^(1/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d \sec \left(fx+e\right)\right)^{\frac{3}{2}} \sqrt{b \tan \left(fx+e\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((d*sec(f*x + e))^(3/2)*sqrt(b*tan(f*x + e))), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{b\tan\left(e+f\,x\right)}\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b\tan\left(e+fx\right)}\left(d\sec\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(3/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*tan(e + f*x))*(d*sec(e + f*x))**(3/2)), x)
```

3.321 $\int \frac{1}{(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}\,dx$

Optimal. Leaf size=72

$$\frac{8\sqrt{b\tan(e+fx)}}{5bd^2f\sqrt{d\sec(e+fx)}}+\frac{2\sqrt{b\tan(e+fx)}}{5bf(d\sec(e+fx))^{5/2}}$$

```
[Out] 2/5*(b*tan(f*x+e))^(1/2)/b/f/(d*sec(f*x+e))^(5/2)+8/5*(b*tan(f*x+e))^(1/2)/
b/d^2/f/(d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2612, 2605}

$$\frac{8\sqrt{b\tan(e+fx)}}{5bd^2f\sqrt{d\sec(e+fx)}}+\frac{2\sqrt{b\tan(e+fx)}}{5bf(d\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*Sec[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (2*Sqrt[b*Tan[e + f*x]])/(5*b*f*(d*Sec[e + f*x])^(5/2)) + (8*Sqrt[b*Tan[e +
 f*x]])/(5*b*d^2*f*Sqrt[d*Sec[e + f*x]])
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\int \frac{1}{(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}\,dx = \frac{2\sqrt{b\tan(e+fx)}}{5bf(d\sec(e+fx))^{5/2}} + \frac{4\int \frac{1}{\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}\,dx}{5d^2}$$
$$= \frac{2\sqrt{b\tan(e+fx)}}{5bf(d\sec(e+fx))^{5/2}} + \frac{8\sqrt{b\tan(e+fx)}}{5bd^2f\sqrt{d\sec(e+fx)}}$$

Mathematica [A] time = 1.18, size = 112, normalized size = 1.56

$$\frac{\sqrt{\frac{1}{\cos(e+fx)+1}}\cos(2(e+fx))\tan(e+fx)+9\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)}\sqrt{\sec(e+fx)+1}}{5d^2f\sqrt{\frac{1}{\cos(e+fx)+1}}\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*Sec[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]]),x]
```

```
[Out] (9*Sqrt[Sec[e + f*x]]*Sqrt[1 + Sec[e + f*x]]*Tan[(e + f*x)/2] + Sqrt[(1 + C
os[e + f*x])^(-1)]*Cos[2*(e + f*x)]*Tan[e + f*x])/(5*d^2*f*Sqrt[(1 + Cos[e
+ f*x])^(-1)]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [A] time = 0.51, size = 58, normalized size = 0.81

$$\frac{2\left(\cos\left(fx+e\right)^3+4\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{5\,bd^3f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/5*(cos(f*x + e)^3 + 4*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqr
t(d/cos(f*x + e))/(b*d^3*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*sec(f*x + e))^(5/2)*sqrt(b*tan(f*x + e))), x)
```

maple [A] time = 0.59, size = 60, normalized size = 0.83

$$\frac{2\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)+4\right)}{5f\cos\left(fx+e\right)^{3}\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x)
```

```
[Out] 2/5/f*sin(f*x+e)*(cos(f*x+e)^2+4)/cos(f*x+e)^3/(d/cos(f*x+e))^(5/2)/(b*sin(
f*x+e)/cos(f*x+e))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}\sqrt{b\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((d*sec(f*x + e))^(5/2)*sqrt(b*tan(f*x + e))), x)
```

mupad [B] time = 3.02, size = 64, normalized size = 0.89

$$\frac{\left(17\sin\left(e+f\,x\right)+\sin\left(3\,e+3\,f\,x\right)\right)\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}{10\,d^3\,f\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(1/2)*(d/cos(e + f*x))^(5/2)),x)
```

```
[Out] ((17*sin(e + f*x) + sin(3*e + 3*f*x))*(d/cos(e + f*x))^(1/2))/(10*d^3*f*((b
*sin(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(5/2)/(b*tan(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.322 $\int \frac{(d\sec(e+fx))^{5/2}}{(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=171

$$-\frac{d^3\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{3/2}f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}+\frac{d^3\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{3/2}f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}}$$

```
[Out] -2*d^2*(d*sec(f*x+e))^(1/2)/b/f/(b*tan(f*x+e))^(1/2)-d^3*arctan((b*sin(f*x+
e))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(1/2)/b^(3/2)/f/(d*sec(f*x+e))^(1/2)/(b*s
in(f*x+e))^(1/2)+d^3*arctanh((b*sin(f*x+e))^(1/2)/b^(1/2))*(b*tan(f*x+e))^(
1/2)/b^(3/2)/f/(d*sec(f*x+e))^(1/2)/(b*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2608, 2616, 2564, 329, 298, 203, 206}

$$-\frac{d^3\sqrt{b\tan(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{3/2}f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}+\frac{d^3\sqrt{b\tan(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{3/2}f\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}}-\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(5/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*d^2*Sqrt[d*Sec[e + f*x]])/(b*f*Sqrt[b*Tan[e + f*x]]) - (d^3*ArcTan[Sqrt
[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[b*Tan[e + f*x]])/(b^(3/2)*f*Sqrt[d*Sec[e + f
*x]]*Sqrt[b*Sin[e + f*x]]) + (d^3*ArcTanh[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqr
t[b*Tan[e + f*x]])/(b^(3/2)*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 298

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[-(a/b
), 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[s/(2*b), Int[1/(r + s*x^2), x
], x] - Dist[s/(2*b), Int[1/(r - s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !G
tQ[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \frac{(d\sec(e+fx))^{5/2}}{(b\tan(e+fx))^{3/2}}\,dx = -\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{d^2\int\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}\,dx}{b^2}$$

$$= -\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{\left(d^3\sqrt{b\tan(e+fx)}\right)\int\sec(e+fx)\sqrt{b\sin(e+fx)}\,dx}{b^2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= -\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{\left(d^3\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int\frac{\sqrt{x}}{1-\frac{x^2}{b^2}}dx, x, b\sin(e+fx)\right)}{b^3f\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= -\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{\left(2d^3\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int\frac{x^2}{1-\frac{x^4}{b^2}}dx, x, \sqrt{b\sin(e+fx)}\right)}{b^3f\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}$$

$$= -\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}} + \frac{\left(d^3\sqrt{b\tan(e+fx)}\right)\text{Subst}\left(\int\frac{1}{b-x^2}dx, x, \sqrt{b\sin(e+fx)}\right)}{bf\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} - \frac{(d^3}{}$$

$$= -\frac{2d^2\sqrt{d\sec(e+fx)}}{bf\sqrt{b\tan(e+fx)}} - \frac{d^3\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{b\tan(e+fx)}}{b^{3/2}f\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} + \frac{d^3\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right.}{b^{3/2}f\sqrt{d\sec(e+fx)}}$$

Mathematica [A] time = 1.09, size = 211, normalized size = 1.23

$$-\frac{d^3\sin(e+fx)\left(-4\csc^2(e+fx)+16\csc^2(2(e+fx))-2\sqrt[4]{\tan^2(e+fx)}\sec^{\frac{3}{2}}(e+fx)\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)+\sqrt[4]{\tan}\right.}{2f(b\tan(e+fx))^{3/2}\sqrt{d\,s}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(5/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] -1/2*(d^3*Sin[e + f*x]*(-4*Csc[e + f*x]^2 + 16*Csc[2*(e + f*x)]^2 - 2*ArcTa
n[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)]*Sec[e + f*x]^(3/2)*(Tan[e + f*
x]^2)^(1/4) + Log[1 - Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)^(1/4)]*Sec[e + f*
x]^(3/2)*(Tan[e + f*x]^2)^(1/4) - Log[1 + Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^
2)^(1/4)]*Sec[e + f*x]^(3/2)*(Tan[e + f*x]^2)^(1/4)))/(f*Sqrt[d*Sec[e + f*x
]]*(b*Tan[e + f*x])^(3/2))
```

fricas [B] time = 0.99, size = 794, normalized size = 4.64

$$\left[-\frac{2\,bd^2\sqrt{-\frac{d}{b}}\,\arctan\left(\frac{\left(\cos\left(fx+e\right)^3-5\,\cos\left(fx+e\right)^2-\left(\cos\left(fx+e\right)^2+6\,\cos\left(fx+e\right)+4\right)\sin\left(fx+e\right)-2\,\cos\left(fx+e\right)+4\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{-\frac{d}{b}}\,\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{4\left(d\cos\left(fx+e\right)^2-\left(d\cos\left(fx+e\right)+d\right)\sin\left(fx+e\right)-d\right)}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(2*b*d^2*sqrt(-d/b)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 - (
cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqr
t(b*sin(f*x + e)/cos(f*x + e))*sqrt(-d/b)*sqrt(d/cos(f*x + e))/(d*cos(f*x +
 e)^2 - (d*cos(f*x + e) + d)*sin(f*x + e) - d))*sin(f*x + e) - b*d^2*sqrt(-
d/b)*log((d*cos(f*x + e)^4 - 72*d*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 - (c
os(f*x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f
*x + e)/cos(f*x + e))*sqrt(-d/b)*sqrt(d/cos(f*x + e)) + 28*(d*cos(f*x + e)^
2 - 2*d)*sin(f*x + e) + 72*d)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 - 4*(cos(f
*x + e)^2 - 2)*sin(f*x + e) + 8))*sin(f*x + e) + 16*d^2*sqrt(b*sin(f*x + e)
/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f*x + e))/(b^2*f*sin(f*x + e)), -1/
8*(2*b*d^2*sqrt(d/b)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 + (cos(f
*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(b*s
in(f*x + e)/cos(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e))/(d*cos(f*x + e)^2
+ (d*cos(f*x + e) + d)*sin(f*x + e) - d))*sin(f*x + e) - b*d^2*sqrt(d/b)*lo
g((d*cos(f*x + e)^4 - 72*d*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 + (cos(f*x
+ e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x + e)
/cos(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e)) - 28*(d*cos(f*x + e)^2 - 2*d)
*sin(f*x + e) + 72*d)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 + 4*(cos(f*x + e)^
2 - 2)*sin(f*x + e) + 8))*sin(f*x + e) + 16*d^2*sqrt(b*sin(f*x + e)/cos(f*x
 + e))*sqrt(d/cos(f*x + e))*cos(f*x + e))/(b^2*f*sin(f*x + e))]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(5/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.62, size = 1061, normalized size = 6.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/2/f*(I*cos(f*x+e)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*((I*co
s(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1
/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2
*2^(1/2))-I*cos(f*x+e)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*((I*
cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^
(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1
/2*2^(1/2))-cos(f*x+e)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*((I*
cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^
(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1
/2*2^(1/2))-cos(f*x+e)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*((I*
cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^
(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1
/2*2^(1/2))+I*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e
)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*Ell
ipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2
))-I*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f
*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi((
(I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-((I*co
s(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(
f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2
-1/2*I,1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-((I*cos(f*x+e)-I+
sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/
2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*
2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+2*2^(1/2))*(d/cos(f*x+e))^(5
/2)*sin(f*x+e)*cos(f*x+e)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(5/2)/(b*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(b\tan\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(5/2)/(b*tan(e + f*x))^(3/2),x)
[Out] int((d/cos(e + f*x))^(5/2)/(b*tan(e + f*x))^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(5/2)/(b*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.323 $\int \frac{(d \sec(e+fx))^{3/2}}{(b \tan(e+fx))^{3/2}} \, dx$

Optimal. Leaf size=97

$$-\frac{2d^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{b^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2d^2}{bf\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

```
[Out] -2*d^2/b/f/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2)+2*d^2*(sin(1/2*e+1/4*P
i+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticE(cos(1/2*e+1/4*Pi+1/
2*f*x),2^(1/2))*(b*tan(f*x+e))^(1/2)/b^2/f/(d*sec(f*x+e))^(1/2)/sin(f*x+e)^
(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2608, 2616, 2640, 2639}

$$-\frac{2d^2E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{b^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2d^2}{bf\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(3/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*d^2)/(b*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]]) - (2*d^2*EllipticE
[(e - Pi/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(b^2*f*Sqrt[d*Sec[e + f*x]]*S
qrt[Sin[e + f*x]])
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d\sec(e+fx))^{3/2}}{(b\tan(e+fx))^{3/2}}\,dx &= -\frac{2d^2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{d^2\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx}{b^2} \\
&= -\frac{2d^2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{\left(d^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{b\sin(e+fx)}\,dx}{b^2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}} \\
&= -\frac{2d^2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{\left(d^2\sqrt{b\tan(e+fx)}\right)\int \sqrt{\sin(e+fx)}\,dx}{b^2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}} \\
&= -\frac{2d^2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{2d^2E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{b^2f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}
\end{aligned}
$$

Mathematica [C] time = 0.63, size = 70, normalized size = 0.72

$$
\frac{2d^2\left(\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)-1\right)}{bf\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(3/2)/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*d^2*(-1 + Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e + f*x]^2]*(-Tan[e + f*
x]^2)^(1/4)))/(b*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$
\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}\,d\sec\left(fx+e\right)}{b^2\tan\left(fx+e\right)^2},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*d*sec(f*x + e)/(b^2*tan(
f*x + e)^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)/(b*tan(f*x + e))^(3/2), x)
```

maple [C] time = 0.59, size = 535, normalized size = 5.52

$$-\frac{\left(-2\cos\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\;\mathrm{EllipticE}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i(-1}{s}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -1/f*(-2*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos
(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+
e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+co
s(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-s
in(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x
+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2*(-I*(-1+cos
(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(
-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+s
in(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))+(-I*(-1+cos(f*x+e))/sin(f*x+e))^(
1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f
*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))
^(1/2),1/2*2^(1/2))+2^(1/2))*(d/cos(f*x+e))^(3/2)*sin(f*x+e)/(b*sin(f*x+e)/
cos(f*x+e))^(3/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b \tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((d*sec(f*x + e))^(3/2)/(b*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(b \tan\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(3/2)/(b*tan(e + f*x))^(3/2),x)
[Out] int((d/cos(e + f*x))^(3/2)/(b*tan(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \sec\left(e+fx\right)\right)^{\frac{3}{2}}}{\left(b \tan\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(3/2)/(b*tan(f*x+e))**(3/2),x)
[Out] Integral((d*sec(e + f*x))**(3/2)/(b*tan(e + f*x))**(3/2), x)
```

3.324 $\int \frac{\sqrt{d \sec(e+fx)}}{(b \tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=32

$$-\frac{2\sqrt{d \sec(e+fx)}}{bf\sqrt{b \tan(e+fx)}}$$

```
[Out] -2*(d*sec(f*x+e))^(1/2)/b/f/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2605}

$$-\frac{2\sqrt{d \sec(e+fx)}}{bf\sqrt{b \tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Sec[e + f*x]]/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*Sqrt[d*Sec[e + f*x]])/(b*f*Sqrt[b*Tan[e + f*x]])
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rubi steps

$$\int \frac{\sqrt{d \sec(e+fx)}}{(b \tan(e+fx))^{3/2}}\,dx = -\frac{2\sqrt{d \sec(e+fx)}}{bf\sqrt{b \tan(e+fx)}}$$

Mathematica [A] time = 0.12, size = 32, normalized size = 1.00

$$-\frac{2\sqrt{d \sec(e+fx)}}{bf\sqrt{b \tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Sec[e + f*x]]/(b*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*Sqrt[d*Sec[e + f*x]])/(b*f*Sqrt[b*Tan[e + f*x]])
```

fricas [A] time = 0.60, size = 52, normalized size = 1.62

$$-\frac{2\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)}{b^{2}f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f*x + e)/(b^2
*f*sin(f*x + e))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\sec\left(fx+e\right)}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))/(b*tan(f*x + e))^(3/2), x)
```

maple [A] time = 0.55, size = 50, normalized size = 1.56

$$-\frac{2\sin\left(fx+e\right)\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{f\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\cos\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] -2/f*sin(f*x+e)*(d/cos(f*x+e))^(1/2)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/cos(f*
x+e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\sec\left(fx+e\right)}}{\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))/(b*tan(f*x + e))^(3/2), x)
```

mupad [B] time = 2.95, size = 46, normalized size = 1.44

$$-\frac{2\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}{b\,f\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(1/2)/(b*tan(e + f*x))^(3/2),x)
```

```
[Out] -(2*(d/cos(e + f*x))^(1/2))/(b*f*((b*sin(2*e + 2*f*x))/(cos(2*e + 2*f*x) +
1))^(1/2))
```

sympy [A] time = 11.01, size = 53, normalized size = 1.66

$$\begin{cases} -\frac{2\sqrt{d}\,\sqrt{\sec\left(e+fx\right)}}{b^{\frac{3}{2}}f\sqrt{\tan\left(e+fx\right)}} & \text{for}\ f \neq 0 \\ \frac{x\sqrt{d\sec\left(e\right)}}{\left(b\tan\left(e\right)\right)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Piecewise((-2*sqrt(d)*sqrt(sec(e + f*x))/(b**(3/2)*f*sqrt(tan(e + f*x))), N
e(f, 0)), (x*sqrt(d*sec(e))/(b*tan(e))**(3/2), True))
```

3.325 $\int \frac{1}{\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=91

$$-\frac{4E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{b^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2}{bf\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

```
[Out] -2/b/f/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(1/2)+4*(sin(1/2*e+1/4*Pi+1/2*f*
x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticE(cos(1/2*e+1/4*Pi+1/2*f*x),2
^(1/2))*(b*tan(f*x+e))^(1/2)/b^2/f/(d*sec(f*x+e))^(1/2)/sin(f*x+e)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2609, 2616, 2640, 2639}

$$-\frac{4E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{b^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2}{bf\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] -2/(b*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]]) - (4*EllipticE[(e - Pi/2
 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(b^2*f*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e
+ f*x]])
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\int \frac{1}{\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{3/2}}\,dx = -\frac{2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{2\int \frac{\sqrt{b\tan(e+fx)}}{\sqrt{d\sec(e+fx)}}\,dx}{b^2}$$

$$= -\frac{2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{\left(2\sqrt{b\tan(e+fx)}\right)\int \sqrt{b\sin(e+}}{b^2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+}}$$

$$= -\frac{2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{\left(2\sqrt{b\tan(e+fx)}\right)\int \sqrt{\sin(e+f}}{b^2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+f}}$$

$$= -\frac{2}{bf\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}} - \frac{4E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\tan(e}}{b^2f\sqrt{d\sec(e+fx)}\sqrt{\sin(e+f}}$$

Mathematica [C] time = 0.55, size = 67, normalized size = 0.74

$$\frac{4\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)-2}{bf\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] (-2 + 4*Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e + f*x]^2]*(-Tan[e + f*x]^2)
^(1/4))/(b*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{b^2d\sec\left(fx+e\right)\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(b^2*d*sec(f*x + e)*tan(
f*x + e)^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d \sec\left(fx+e\right)}\left(b \tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(d*sec(f*x + e))*(b*tan(f*x + e))^(3/2)), x)
```

maple [C] time = 0.64, size = 556, normalized size = 6.11

$$\left(4 \cos\left(fx+e\right)\sqrt{\frac{i \cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\sqrt{-\frac{i \cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\mathrm{EllipticE}\left(\sqrt{\frac{i \cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}, \frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i(-1+c}{\sin}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/f*(4*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f
*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e)
)/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)-2*co
s(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-s
in(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x
+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+4*(-I*(-1+cos
(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(
-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+s
in(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-2*(-I*(-1+cos(f*x+e))/sin(f*x+e))
^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin
(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e
))^(1/2),1/2*2^(1/2))+cos(f*x+e)*2^(1/2)-2*2^(1/2))*sin(f*x+e)/(d/cos(f*x+e
))^(1/2)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/cos(f*x+e)^2*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d\sec\left(fx+e\right)}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/(sqrt(d*sec(f*x + e))*(b*tan(f*x + e))^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(b\tan\left(e+f\,x\right)\right)^{3/2}\,\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(1/2)),x)
```

```
[Out] int(1/((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(b\tan\left(e+fx\right)\right)^{\frac{3}{2}}\sqrt{d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(1/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Integral(1/((b*tan(e + f*x))**(3/2)*sqrt(d*sec(e + f*x))), x)
```

3.326 $\int \frac{1}{(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=72

$$\frac{2}{3bf\sqrt{b\tan(e+fx)}\,(d\sec(e+fx))^{3/2}}-\frac{8\sqrt{d\sec(e+fx)}}{3bd^2f\sqrt{b\tan(e+fx)}}$$

```
[Out] 2/3/b/f/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(1/2)-8/3*(d*sec(f*x+e))^(1/2)/
b/d^2/f/(b*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 67, normalized size of antiderivative = 0.93, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2609, 2605}

$$-\frac{8(b\tan(e+fx))^{3/2}}{3b^3f(d\sec(e+fx))^{3/2}}-\frac{2}{bf\sqrt{b\tan(e+fx)}\,(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] -2/(b*f*(d*Sec[e + f*x])^(3/2)*Sqrt[b*Tan[e + f*x]]) - (8*(b*Tan[e + f*x])^
(3/2))/(3*b^3*f*(d*Sec[e + f*x])^(3/2))
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rubi steps

$$\int \frac{1}{(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}}\,dx = -\frac{2}{bf(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} - \frac{4\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{3/2}}\,dx}{b^2}$$
$$= -\frac{2}{bf(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+fx)}} - \frac{8(b\tan(e+fx))^{3/2}}{3b^3f(d\sec(e+fx))^{3/2}}$$

Mathematica [A] time = 0.18, size = 52, normalized size = 0.72

$$\frac{(\cos(2(e+fx))-7)\sec^2(e+fx)}{3bf\sqrt{b\tan(e+fx)}\,(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] ((-7 + Cos[2*(e + f*x)])*Sec[e + f*x]^2)/(3*b*f*(d*Sec[e + f*x])^(3/2)*Sqrt
[b*Tan[e + f*x]])
```

fricas [A] time = 0.58, size = 66, normalized size = 0.92

$$\frac{2\left(\cos\left(fx+e\right)^3-4\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{3\,b^2d^2f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/3*(cos(f*x + e)^3 - 4*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqr
t(d/cos(f*x + e))/(b^2*d^2*f*sin(f*x + e))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

[Out] integrate(1/((d*sec(f*x + e))^(3/2)*(b*tan(f*x + e))^(3/2)), x)

maple [A] time = 0.53, size = 60, normalized size = 0.83

$$\frac{2 \sin \left(f x+e\right) \left(-4+\cos^{2}\left(f x+e\right)\right)}{3 f \cos \left(f x+e\right)^{3} \left(\frac{d}{\cos \left(f x+e\right)}\right)^{\frac{3}{2}} \left(\frac{b \sin \left(f x+e\right)}{\cos \left(f x+e\right)}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x)

[Out] 2/3/f*sin(f*x+e)*(-4+cos(f*x+e)^2)/cos(f*x+e)^3/(d/cos(f*x+e))^(3/2)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d \sec \left(f x+e\right)\right)^{\frac{3}{2}} \left(b \tan \left(f x+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima")

[Out] integrate(1/((d*sec(f*x + e))^(3/2)*(b*tan(f*x + e))^(3/2)), x)

mupad [B] time = 3.20, size = 60, normalized size = 0.83

$$\frac{\left(\cos \left(2\,e+2\,f\,x\right)-7\right)\,\sqrt{\frac{d}{\cos \left(e+f\,x\right)}}}{3\,b\,d^2\,f\,\sqrt{\frac{b\,\sin \left(2\,e+2\,f\,x\right)}{\cos \left(2\,e+2\,f\,x\right)+1}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(3/2)),x)

[Out] ((cos(2*e + 2*f*x) - 7)*(d/cos(e + f*x))^(1/2))/(3*b*d^2*f*((b*sin(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(3/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.327 $\int \frac{1}{(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{12(b\tan(e+fx))^{3/2}}{5b^3f(d\sec(e+fx))^{5/2}}-\frac{24E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5b^2d^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{2}{bf\sqrt{b\tan(e+fx)}\,(d\sec(e+fx))^{5/2}}$$

```
[Out] -2/b/f/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(1/2)+24/5*(sin(1/2*e+1/4*Pi+1/2
*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticE(cos(1/2*e+1/4*Pi+1/2*f*x
),2^(1/2))*(b*tan(f*x+e))^(1/2)/b^2/d^2/f/(d*sec(f*x+e))^(1/2)/sin(f*x+e)^(
1/2)-12/5*(b*tan(f*x+e))^(3/2)/b^3/f/(d*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.19, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2609, 2612, 2616, 2640, 2639}

$$-\frac{24E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{b\tan(e+fx)}}{5b^2d^2f\sqrt{\sin(e+fx)}\sqrt{d\sec(e+fx)}}-\frac{12(b\tan(e+fx))^{3/2}}{5b^3f(d\sec(e+fx))^{5/2}}-\frac{2}{bf\sqrt{b\tan(e+fx)}\,(d\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] -2/(b*f*(d*Sec[e + f*x])^(5/2)*Sqrt[b*Tan[e + f*x]]) - (24*EllipticE[(e - P
i/2 + f*x)/2, 2]*Sqrt[b*Tan[e + f*x]])/(5*b^2*d^2*f*Sqrt[d*Sec[e + f*x]]*Sq
rt[Sin[e + f*x]]) - (12*(b*Tan[e + f*x])^(3/2))/(5*b^3*f*(d*Sec[e + f*x])^(
5/2))
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2640

```
Int[Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[b*Sin[c + d*
x]]/Sqrt[Sin[c + d*x]], Int[Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c, d},
x]
```

Rubi steps

$$\int \frac{1}{(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}}\,dx = -\frac{2}{bf(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} - \frac{6\int \frac{\sqrt{b\tan(e+fx)}}{(d\sec(e+fx))^{5/2}}\,dx}{b^2}$$

$$= -\frac{2}{bf(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} - \frac{12(b\tan(e+fx))^{3/2}}{5b^3f(d\sec(e+fx))^{5/2}} - \frac{12\int}{}$$

$$= -\frac{2}{bf(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} - \frac{12(b\tan(e+fx))^{3/2}}{5b^3f(d\sec(e+fx))^{5/2}} - \frac{(12}{5}$$

$$= -\frac{2}{bf(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} - \frac{12(b\tan(e+fx))^{3/2}}{5b^3f(d\sec(e+fx))^{5/2}} - \frac{(12}{5}$$

$$= -\frac{2}{bf(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}} - \frac{24E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{b\,\mathrm{ta}}}{5b^2d^2f\sqrt{d\sec(e+fx)}\sqrt{\mathrm{sir}}}$$

Mathematica [C] time = 0.66, size = 81, normalized size = 0.62

$$\frac{24\sqrt[4]{-\tan^2(e+fx)}\;{}_2F_1\left(-\frac{1}{4},\frac{1}{4};\frac{3}{4};\sec^2(e+fx)\right)+\cos(2(e+fx))-11}{5bd^2f\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2)),x]
```

```
[Out] (-11 + Cos[2*(e + f*x)] + 24*Hypergeometric2F1[-1/4, 1/4, 3/4, Sec[e + f*x]
^2]*(-Tan[e + f*x]^2)^(1/4))/(5*b*d^2*f*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e +
 f*x]])
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{b^2d^3\sec\left(fx+e\right)^3\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(b^2*d^3*sec(f*x + e)^3*
tan(f*x + e)^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*sec(f*x + e))^(5/2)*(b*tan(f*x + e))^(3/2)), x)
```

maple [C] time = 0.64, size = 570, normalized size = 4.38

$$\left(-12\cos\left(fx+e\right)\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\text{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\sqrt{-\frac{i(-}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x)
```

```
[Out] 1/5/f*(-12*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*c
os(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*
```

```
x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+
24*cos(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e
)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*x+e)-I+sin(f*x+e))/si
n(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+cos(f*x+
e)^3*2^(1/2)-12*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(
f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*E
llipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))+24*(-I
*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))
^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticE(((I*cos(f*
x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))+6*cos(f*x+e)*2^(1/2)-12*2
^(1/2))*sin(f*x+e)/(d/cos(f*x+e))^(5/2)/(b*sin(f*x+e)/cos(f*x+e))^(3/2)/cos
(f*x+e)^4*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((d*sec(f*x + e))^(5/2)*(b*tan(f*x + e))^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(b\tan\left(e+f\,x\right)\right)^{3/2}\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(5/2)),x)
```

```
[Out] int(1/((b*tan(e + f*x))^(3/2)*(d/cos(e + f*x))^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(5/2)/(b*tan(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.328 $\int \frac{(d\sec(e+fx))^{7/2}}{(b\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=172

$$\frac{d^3\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{5/2}f\sqrt{b\tan(e+fx)}}+\frac{d^3\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{5/2}f\sqrt{b\tan(e+fx)}}-$$

```
[Out] d^3*arctan((b*sin(f*x+e))^(1/2)/b^(1/2))*(d*sec(f*x+e))^(1/2)*(b*sin(f*x+e)
)^(1/2)/b^(5/2)/f/(b*tan(f*x+e))^(1/2)+d^3*arctanh((b*sin(f*x+e))^(1/2)/b^(
1/2))*(d*sec(f*x+e))^(1/2)*(b*sin(f*x+e))^(1/2)/b^(5/2)/f/(b*tan(f*x+e))^(1
/2)-2/3*d^2*(d*sec(f*x+e))^(3/2)/b/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.18, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {2608, 2616, 2564, 329, 212, 206, 203}

$$\frac{d^3\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{5/2}f\sqrt{b\tan(e+fx)}}+\frac{d^3\sqrt{b\sin(e+fx)}\,\sqrt{d\sec(e+fx)}\,\tanh^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)}{b^{5/2}f\sqrt{b\tan(e+fx)}}-$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(7/2)/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-2*d^2*(d*Sec[e + f*x])^(3/2))/(3*b*f*(b*Tan[e + f*x])^(3/2)) + (d^3*ArcTa
n[Sqrt[b*Sin[e + f*x]]/Sqrt[b]]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])/
(b^(5/2)*f*Sqrt[b*Tan[e + f*x]]) + (d^3*ArcTanh[Sqrt[b*Sin[e + f*x]]/Sqrt[b
]]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Sin[e + f*x]])/(b^(5/2)*f*Sqrt[b*Tan[e + f*x
]])
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 212

```
Int[((a_) + (b_.)*(x_)^4)^(-1), x_Symbol] :> With[{r = Numerator[Rt[-(a/b),
 2]], s = Denominator[Rt[-(a/b), 2]]}, Dist[r/(2*a), Int[1/(r - s*x^2), x],
 x] + Dist[r/(2*a), Int[1/(r + s*x^2), x], x]] /; FreeQ[{a, b}, x] &&  !GtQ
[a/b, 0]
```

Rule 329

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> With[{k =
 Denominator[m]}, Dist[k/c, Subst[Int[x^(k*(m + 1) - 1)*(a + (b*x^(k*n))/c^
n)^p, x], x, (c*x)^(1/k)], x]] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && F
ractionQ[m] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2564

```
Int[cos[(e_.) + (f_.)*(x_)]^(n_.)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.), x_
Symbol] :> Dist[1/(a*f), Subst[Int[x^m*(1 - x^2/a^2)^((n - 1)/2), x], x, a*
Sin[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2] &&  !(In
tegerQ[(m - 1)/2] && LtQ[0, m, n])
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int \frac{(d\sec(e+fx))^{7/2}}{(b\tan(e+fx))^{5/2}}\,dx = -\frac{2d^2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}} + \frac{d^2\int \frac{(d\sec(e+fx))^{3/2}}{\sqrt{b\tan(e+fx)}}\,dx}{b^2}$$

$$= -\frac{2d^2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}} + \frac{\left(d^3\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}\right)\int \frac{\sec(e+fx)}{\sqrt{b\sin(e+fx)}}\,dx}{b^2\sqrt{b\tan(e+fx)}}$$

$$= -\frac{2d^2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}} + \frac{\left(d^3\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int \frac{1}{\sqrt{x}\left(1-\frac{x^2}{b^2}\right)}\,dx, x\right.}{b^3f\sqrt{b\tan(e+fx)}}$$

$$= -\frac{2d^2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}} + \frac{\left(2d^3\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int \frac{1}{1-\frac{x^4}{b^2}}\,dx, x, \sqrt{\right.}}{b^3f\sqrt{b\tan(e+fx)}}$$

$$= -\frac{2d^2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}} + \frac{\left(d^3\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}\right)\mathrm{Subst}\left(\int \frac{1}{b-x^2}\,dx, x, \sqrt{b\right.}}{b^2f\sqrt{b\tan(e+fx)}}$$

$$= -\frac{2d^2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}} + \frac{d^3\tan^{-1}\left(\frac{\sqrt{b\sin(e+fx)}}{\sqrt{b}}\right)\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}}{b^{5/2}f\sqrt{b\tan(e+fx)}} + \frac{d^3}{}$$

Mathematica [A] time = 1.21, size = 144, normalized size = 0.84

$$-\frac{d^4\sqrt{b\tan(e+fx)}\left(2\sqrt[4]{\tan^2(e+fx)}\csc^2(e+fx)+3\sqrt{\sec(e+fx)}\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)}}{\sqrt[4]{\tan^2(e+fx)}}\right)-3\sqrt{\sec(e+fx)}\tanh^{}\right.}{3b^3f\sqrt[4]{\tan^2(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(7/2)/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] -1/3*(d^4*Sqrt[b*Tan[e + f*x]]*(3*ArcTan[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2
)^(1/4)]*Sqrt[Sec[e + f*x]] - 3*ArcTanh[Sqrt[Sec[e + f*x]]/(Tan[e + f*x]^2)
^(1/4)]*Sqrt[Sec[e + f*x]] + 2*Csc[e + f*x]^2*(Tan[e + f*x]^2)^(1/4)))/(b^3
*f*Sqrt[d*Sec[e + f*x]]*(Tan[e + f*x]^2)^(1/4))
```

fricas [B] time = 0.99, size = 850, normalized size = 4.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [1/24*(16*d^3*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f*
x + e) - 6*(b*d^3*cos(f*x + e)^2 - b*d^3)*sqrt(-d/b)*arctan(1/4*(cos(f*x +
e)^3 - 5*cos(f*x + e)^2 - (cos(f*x + e)^2 + 6*cos(f*x + e) + 4)*sin(f*x + e
) - 2*cos(f*x + e) + 4)*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(-d/b)*sqrt(d
/cos(f*x + e))/(d*cos(f*x + e)^2 - (d*cos(f*x + e) + d)*sin(f*x + e) - d))
+ 3*(b*d^3*cos(f*x + e)^2 - b*d^3)*sqrt(-d/b)*log((d*cos(f*x + e)^4 - 72*d*
cos(f*x + e)^2 + 8*(7*cos(f*x + e)^3 - (cos(f*x + e)^3 - 8*cos(f*x + e))*si
n(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(-d/b)*s
qrt(d/cos(f*x + e)) + 28*(d*cos(f*x + e)^2 - 2*d)*sin(f*x + e) + 72*d)/(cos
(f*x + e)^4 - 8*cos(f*x + e)^2 - 4*(cos(f*x + e)^2 - 2)*sin(f*x + e) + 8)))
/(b^3*f*cos(f*x + e)^2 - b^3*f), 1/24*(16*d^3*sqrt(b*sin(f*x + e)/cos(f*x +
 e))*sqrt(d/cos(f*x + e))*cos(f*x + e) + 6*(b*d^3*cos(f*x + e)^2 - b*d^3)*s
qrt(d/b)*arctan(1/4*(cos(f*x + e)^3 - 5*cos(f*x + e)^2 + (cos(f*x + e)^2 +
6*cos(f*x + e) + 4)*sin(f*x + e) - 2*cos(f*x + e) + 4)*sqrt(b*sin(f*x + e)/
cos(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e))/(d*cos(f*x + e)^2 + (d*cos(f*x
 + e) + d)*sin(f*x + e) - d)) + 3*(b*d^3*cos(f*x + e)^2 - b*d^3)*sqrt(d/b)*
log((d*cos(f*x + e)^4 - 72*d*cos(f*x + e)^2 - 8*(7*cos(f*x + e)^3 + (cos(f*
x + e)^3 - 8*cos(f*x + e))*sin(f*x + e) - 8*cos(f*x + e))*sqrt(b*sin(f*x +
e)/cos(f*x + e))*sqrt(d/b)*sqrt(d/cos(f*x + e)) - 28*(d*cos(f*x + e)^2 - 2*
d)*sin(f*x + e) + 72*d)/(cos(f*x + e)^4 - 8*cos(f*x + e)^2 + 4*(cos(f*x + e
)^2 - 2)*sin(f*x + e) + 8)))/(b^3*f*cos(f*x + e)^2 - b^3*f)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \sec\left(fx+e\right)\right)^{\frac{7}{2}}}{\left(b \tan\left(fx+e\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(7/2)/(b*tan(f*x + e))^(5/2), x)
```

maple [C] time = 0.66, size = 1367, normalized size = 7.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(5/2),x)
```

```
[Out] 1/6/f*(3*I*cos(f*x+e)*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*
cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/si
n(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1
/2-1/2*I,1/2*2^(1/2))+3*I*cos(f*x+e)*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x
+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I
-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+e))/sin(
f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-6*I*cos(f*x+e)*sin(f*x+e)*(-(I*cos(f*x
+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/
sin(f*x+e))^(1/2),1/2*2^(1/2))*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/
2)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)+3*I*sin(f*x+e)*(-I*(-1+cos(f*x+e))
/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(
f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(f*x+
e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*I*sin(f*x+e)*(-I*(-1+cos(f*x
+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*
cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-I+sin(
f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-6*I*sin(f*x+e)*(-I*(-1+cos
(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(
-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+s
in(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))-3*cos(f*x+e)*sin(f*x+e)*(-I*(-1+c
os(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)
*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((I*cos(f*x+e)-
I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*cos(f*x+e)*sin(f*x
+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(
f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(((
I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-3*sin(f
*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/si
n(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticPi(
((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2-1/2*I,1/2*2^(1/2))+3*sin
(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*x+e)-I+sin(f*x+e))/
sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticP
i(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2+1/2*I,1/2*2^(1/2))-2*2
^(1/2))*(d/cos(f*x+e))^(7/2)*sin(f*x+e)*cos(f*x+e)/(b*sin(f*x+e)/cos(f*x+e)
)^(5/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{7}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(7/2)/(b*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(7/2)/(b*tan(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{7/2}}{\left(b\tan\left(e+f\,x\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(7/2)/(b*tan(e + f*x))^(5/2),x)
[Out] int((d/cos(e + f*x))^(7/2)/(b*tan(e + f*x))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(7/2)/(b*tan(f*x+e))**(5/2),x)
[Out] Timed out
```

3.329 $\int \frac{(d\sec(e+fx))^{5/2}}{(b\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=101

$$\frac{2d^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3b^2f\sqrt{b\tan(e+fx)}}-\frac{2d^2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}$$

```
[Out] -2/3*d^2*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*Elli
pticF(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1
/2)/b^2/f/(b*tan(f*x+e))^(1/2)-2/3*d^2*(d*sec(f*x+e))^(1/2)/b/f/(b*tan(f*x+
e))^(3/2)
```

Rubi [A] time = 0.13, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2608, 2616, 2642, 2641}

$$\frac{2d^2\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3b^2f\sqrt{b\tan(e+fx)}}-\frac{2d^2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(5/2)/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-2*d^2*Sqrt[d*Sec[e + f*x]])/(3*b*f*(b*Tan[e + f*x])^(3/2)) + (2*d^2*Ellip
ticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x]])/(3*b^2
*f*Sqrt[b*Tan[e + f*x]])
```

Rule 2608

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[(a^2*(a*Sec[e + f*x])^(m - 2)*(b*Tan[e + f*x])^(n +
1))/(b*f*(n + 1)), x] - Dist[(a^2*(m - 2))/(b^2*(n + 1)), Int[(a*Sec[e + f*
x])^(m - 2)*(b*Tan[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f}, x] && L
tQ[n, -1] && (GtQ[m, 1] || (EqQ[m, 1] && EqQ[n, -3/2])) && IntegersQ[2*m, 2
*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(d\sec(e+fx))^{5/2}}{(b\tan(e+fx))^{5/2}}\,dx &= -\frac{2d^2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}+\frac{d^2\int\frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx}{3b^2}\\
&= -\frac{2d^2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}+\frac{\left(d^2\sqrt{d\sec(e+fx)}\,\sqrt{b\sin(e+fx)}\right)\int\frac{1}{\sqrt{b\sin(e+fx)}}\,dx}{3b^2\sqrt{b\tan(e+fx)}}\\
&= -\frac{2d^2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}+\frac{\left(d^2\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}\right)\int\frac{1}{\sqrt{\sin(e+fx)}}\,dx}{3b^2\sqrt{b\tan(e+fx)}}\\
&= -\frac{2d^2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}+\frac{2d^2F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\,\sqrt{\sin(e+fx)}}{3b^2f\sqrt{b\tan(e+fx)}}
\end{aligned}$$

Mathematica [C] time = 0.44, size = 116, normalized size = 1.15

$$\frac{2d^3\sqrt{b\tan(e+fx)}\left(\sqrt{2}\sqrt{\sec(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)-\cot(e+fx)\csc(e+fx)\sqrt{\sec(e+fx)+1}\right)}{3b^3f\sqrt{\sec(e+fx)+1}\,\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(5/2)/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (2*d^3*(Sqrt[2]*Hypergeometric2F1[1/4, 1/2, 5/4, -Tan[(e + f*x)/2]^2]*Sqrt[
Sec[e + f*x]] - Cot[e + f*x]*Csc[e + f*x]*Sqrt[1 + Sec[e + f*x]])*Sqrt[b*Ta
n[e + f*x]])/(3*b^3*f*Sqrt[d*Sec[e + f*x]]*Sqrt[1 + Sec[e + f*x]])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}d^{2}\sec\left(fx+e\right)^{2}}{b^{3}\tan\left(fx+e\right)^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))*d^2*sec(f*x + e)^2/(b^3*
tan(f*x + e)^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\sec\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(5/2)/(b*tan(f*x + e))^(5/2), x)
```

maple [C] time = 0.59, size = 314, normalized size = 3.11

$$-\frac{\left(-i\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\text{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/3/f*(-I*cos(f*x+e)*sin(f*x+e)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^
(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))
*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*x
+e))^(1/2)-I*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)
-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin
(f*x+e))^(1/2),1/2*2^(1/2))*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2
)+cos(f*x+e)*2^(1/2))*(d/cos(f*x+e))^(5/2)*sin(f*x+e)/(b*sin(f*x+e)/cos(f*x
+e))^(5/2)*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \sec\left(fx+e\right)\right)^{\frac{5}{2}}}{\left(b \tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x, algorithm="maxima")
[Out] integrate((d*sec(f*x + e))^(5/2)/(b*tan(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(b\tan\left(e+f\,x\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(5/2)/(b*tan(e + f*x))^(5/2),x)
[Out] int((d/cos(e + f*x))^(5/2)/(b*tan(e + f*x))^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(5/2)/(b*tan(f*x+e))**(5/2),x)
[Out] Timed out
```

3.330 $\int \frac{(d\sec(e+fx))^{3/2}}{(b\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=34

$$-\frac{2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}}$$

```
[Out] -2/3*(d*sec(f*x+e))^(3/2)/b/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.06, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2605}

$$-\frac{2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Sec[e + f*x])^(3/2)/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-2*(d*Sec[e + f*x])^(3/2))/(3*b*f*(b*Tan[e + f*x])^(3/2))
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rubi steps

$$\int \frac{(d\sec(e+fx))^{3/2}}{(b\tan(e+fx))^{5/2}}\,dx = -\frac{2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}}$$

Mathematica [A] time = 0.15, size = 34, normalized size = 1.00

$$-\frac{2(d\sec(e+fx))^{3/2}}{3bf(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Sec[e + f*x])^(3/2)/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-2*(d*Sec[e + f*x])^(3/2))/(3*b*f*(b*Tan[e + f*x])^(3/2))
```

fricas [B] time = 0.53, size = 61, normalized size = 1.79

$$\frac{2\,d\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)}{3\left(b^{3}f\cos\left(fx+e\right)^{2}-b^{3}f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*d*sqrt(b*sin(f*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))*cos(f*x + e)/(
b^3*f*cos(f*x + e)^2 - b^3*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)/(b*tan(f*x + e))^(5/2), x)
```

maple [A] time = 0.49, size = 50, normalized size = 1.47

$$-\frac{2\sin\left(fx+e\right)\left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}}{3f\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\cos\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x)
```

```
[Out] -2/3/f*sin(f*x+e)*(d/cos(f*x+e))^(3/2)/(b*sin(f*x+e)/cos(f*x+e))^(5/2)/cos(
f*x+e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e))^(3/2)/(b*tan(f*x + e))^(5/2), x)
```

mupad [B] time = 3.17, size = 55, normalized size = 1.62

$$-\frac{2\,d\,\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}{3\,b^2\,f\,\sin\left(e+f\,x\right)\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(3/2)/(b*tan(e + f*x))^(5/2),x)
```

```
[Out] -(2*d*(d/cos(e + f*x))^(1/2))/(3*b^2*f*sin(e + f*x)*((b*sin(2*e + 2*f*x))/(
cos(2*e + 2*f*x) + 1))^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(3/2)/(b*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.331 $\int \frac{\sqrt{d\sec(e+fx)}}{(b\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=95

$$-\frac{4\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3b^2f\sqrt{b\tan(e+fx)}}-\frac{2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}$$

```
[Out] 4/3*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticF
(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1/2)/b
^2/f/(b*tan(f*x+e))^(1/2)-2/3*(d*sec(f*x+e))^(1/2)/b/f/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.11, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {2609, 2616, 2642, 2641}

$$-\frac{4\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3b^2f\sqrt{b\tan(e+fx)}}-\frac{2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Sec[e + f*x]]/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-2*Sqrt[d*Sec[e + f*x]])/(3*b*f*(b*Tan[e + f*x])^(3/2)) - (4*EllipticF[(e
- Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x]])/(3*b^2*f*Sqrt[
b*Tan[e + f*x]])
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{d\sec(e+fx)}}{(b\tan(e+fx))^{5/2}}\,dx &= -\frac{2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}-\frac{2\int\frac{\sqrt{d\sec(e+fx)}}{\sqrt{b\tan(e+fx)}}\,dx}{3b^2}\\ &= -\frac{2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}-\frac{\left(2\sqrt{d\sec(e+fx)}\sqrt{b\sin(e+fx)}\right)\int\frac{1}{\sqrt{b\sin(e+fx)}}\,dx}{3b^2\sqrt{b\tan(e+fx)}}\\ &= -\frac{2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}-\frac{\left(2\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}\right)\int\frac{1}{\sqrt{\sin(e+fx)}}\,dx}{3b^2\sqrt{b\tan(e+fx)}}\\ &= -\frac{2\sqrt{d\sec(e+fx)}}{3bf(b\tan(e+fx))^{3/2}}-\frac{4F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{d\sec(e+fx)}\sqrt{\sin(e+fx)}}{3b^2f\sqrt{b\tan(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.72, size = 70, normalized size = 0.74

$$-\frac{2\sqrt{d\sec(e+fx)}\left(2\left(-\tan^2(e+fx)\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\sec^2(e+fx)\right)+1\right)}{3bf(b\tan(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Sec[e + f*x]]/(b*Tan[e + f*x])^(5/2),x]
```

```
[Out] (-2*Sqrt[d*Sec[e + f*x]]*(1 + 2*Hypergeometric2F1[1/4, 3/4, 5/4, Sec[e + f*
x]^2]*(-Tan[e + f*x]^2)^(3/4)))/(3*b*f*(b*Tan[e + f*x])^(3/2))
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{b^3\tan\left(fx+e\right)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(b^3*tan(f*x + e)^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d \sec\left(fx+e\right)}}{\left(b \tan\left(fx+e\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*sec(f*x + e))/(b*tan(f*x + e))^(5/2), x)
```

maple [C] time = 0.62, size = 322, normalized size = 3.39

$$-\frac{\left(2i\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\ \cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\ \mathrm{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}, \frac{\sqrt{2}}{2}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/3/f*(2*I*cos(f*x+e)*sin(f*x+e)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))
^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2)
)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-I*(-1+cos(f*x+e))/sin(f*
x+e))^(1/2)+2*I*sin(f*x+e)*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(1/2)*((I*cos(f*
x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+
e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1
/2))+cos(f*x+e)*2^(1/2))*(d/cos(f*x+e))^(1/2)*sin(f*x+e)/(b*sin(f*x+e)/cos(
f*x+e))^(5/2)/cos(f*x+e)^2*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d \sec\left(fx+e\right)}}{\left(b \tan\left(fx+e\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x, algorithm="maxima")
[Out] integrate(sqrt(d*sec(f*x + e))/(b*tan(f*x + e))^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{\frac{d}{\cos(e+f\,x)}}}{\left(b\tan\left(e+f\,x\right)\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d/cos(e + f*x))^(1/2)/(b*tan(e + f*x))^(5/2),x)
[Out] int((d/cos(e + f*x))^(1/2)/(b*tan(e + f*x))^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\sec\left(e+fx\right)}}{\left(b\tan\left(e+fx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*sec(f*x+e))**(1/2)/(b*tan(f*x+e))**(5/2),x)
[Out] Integral(sqrt(d*sec(e + f*x))/(b*tan(e + f*x))**(5/2), x)
```

3.332 $\int \frac{1}{\sqrt{d\sec(e+fx)}\,(b\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=69

$$-\frac{8\sqrt{b\tan(e+fx)}}{3b^3f\sqrt{d\sec(e+fx)}}-\frac{2}{3bf(b\tan(e+fx))^{3/2}\sqrt{d\sec(e+fx)}}$$

```
[Out] -8/3*(b*tan(f*x+e))^(1/2)/b^3/f/(d*sec(f*x+e))^(1/2)-2/3/b/f/(d*sec(f*x+e))
^(1/2)/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {2609, 2605}

$$-\frac{8\sqrt{b\tan(e+fx)}}{3b^3f\sqrt{d\sec(e+fx)}}-\frac{2}{3bf(b\tan(e+fx))^{3/2}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(5/2)),x]
```

```
[Out] -2/(3*b*f*Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(3/2)) - (8*Sqrt[b*Tan[e +
f*x]])/(3*b^3*f*Sqrt[d*Sec[e + f*x]])
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rubi steps

$$\int \frac{1}{\sqrt{d\sec(e+fx)}(b\tan(e+fx))^{5/2}}\,dx = -\frac{2}{3bf\sqrt{d\sec(e+fx)}(b\tan(e+fx))^{3/2}} - \frac{4\int \frac{1}{\sqrt{d\sec(e+fx)}\sqrt{b\tan(e+fx)}}\,dx}{3b^2}$$
$$= -\frac{2}{3bf\sqrt{d\sec(e+fx)}(b\tan(e+fx))^{3/2}} - \frac{8\sqrt{b\tan(e+fx)}}{3b^3f\sqrt{d\sec(e+fx)}}$$

Mathematica [A] time = 0.85, size = 110, normalized size = 1.59

$$-\frac{2\left(3\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)+1}\sqrt{\sec(e+fx)}+\sqrt{\frac{1}{\cos(e+fx)+1}}\csc(e+fx)\sec(e+fx)\right)}{3b^2f\sqrt{\frac{1}{\cos(e+fx)+1}}\sqrt{b\tan(e+fx)}\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[d*Sec[e + f*x]]*(b*Tan[e + f*x])^(5/2)),x]
```

```
[Out] (-2*(Sqrt[(1 + Cos[e + f*x])^(-1)]*Csc[e + f*x]*Sec[e + f*x] + 3*Sqrt[Sec[e
 + f*x]]*Sqrt[1 + Sec[e + f*x]]*Tan[(e + f*x)/2]))/(3*b^2*f*Sqrt[(1 + Cos[e
 + f*x])^(-1)]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e + f*x]])
```

fricas [A] time = 0.42, size = 75, normalized size = 1.09

$$-\frac{2\left(3\cos\left(fx+e\right)^3-4\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{3\left(b^3df\cos\left(fx+e\right)^2-b^3df\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x, algorithm="fricas"
)
```

```
[Out] -2/3*(3*cos(f*x + e)^3 - 4*cos(f*x + e))*sqrt(b*sin(f*x + e)/cos(f*x + e))*
sqrt(d/cos(f*x + e))/(b^3*d*f*cos(f*x + e)^2 - b^3*d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d\sec\left(fx+e\right)}\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(d*sec(f*x + e))*(b*tan(f*x + e))^(5/2)), x)
```

maple [A] time = 0.58, size = 62, normalized size = 0.90

$$\frac{2\sin\left(fx+e\right)\left(3\left(\cos^2\left(fx+e\right)\right)-4\right)}{3f\cos\left(fx+e\right)^3\sqrt{\frac{d}{\cos\left(fx+e\right)}}\left(\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x)
[Out] 2/3/f*sin(f*x+e)*(3*cos(f*x+e)^2-4)/cos(f*x+e)^3/(d/cos(f*x+e))^(1/2)/(b*si
n(f*x+e)/cos(f*x+e))^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d\sec\left(fx+e\right)}\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(1/2)/(b*tan(f*x+e))^(5/2),x, algorithm="maxima"
)
[Out] integrate(1/(sqrt(d*sec(f*x + e))*(b*tan(f*x + e))^(5/2)), x)
```

mupad [B] time = 3.56, size = 81, normalized size = 1.17

$$\frac{\left(\frac{13\sin\left(e+f\,x\right)}{3}-\sin\left(3\,e+3\,f\,x\right)\right)\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}}{b^2\,d\,f\,\left(\cos\left(2\,e+2\,f\,x\right)-1\right)\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(1/2)),x)
[Out] (((13*sin(e + f*x))/3 - sin(3*e + 3*f*x))*(d/cos(e + f*x))^(1/2))/(b^2*d*f*
(cos(2*e + 2*f*x) - 1)*((b*sin(2*e + 2*f*x))/(cos(2*e + 2*f*x) + 1))^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(1/2)/(b*tan(f*x+e))**(5/2),x)
[Out] Timed out
```

3.333 $\int \frac{1}{(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=132

$$-\frac{4\sqrt{b\tan(e+fx)}}{3b^3f(d\sec(e+fx))^{3/2}}-\frac{8\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3b^2d^2f\sqrt{b\tan(e+fx)}}-\frac{2}{3bf(b\tan(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}$$

```
[Out] 8/3*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticF
(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*(d*sec(f*x+e))^(1/2)*sin(f*x+e)^(1/2)/b
^2/d^2/f/(b*tan(f*x+e))^(1/2)-4/3*(b*tan(f*x+e))^(1/2)/b^3/f/(d*sec(f*x+e))
^(3/2)-2/3/b/f/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(3/2)
```

Rubi [A] time = 0.18, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {2609, 2612, 2616, 2642, 2641}

$$-\frac{8\sqrt{\sin(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)\sqrt{d\sec(e+fx)}}{3b^2d^2f\sqrt{b\tan(e+fx)}}-\frac{4\sqrt{b\tan(e+fx)}}{3b^3f(d\sec(e+fx))^{3/2}}-\frac{2}{3bf(b\tan(e+fx))^{3/2}(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(5/2)),x]
```

```
[Out] -2/(3*b*f*(d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(3/2)) - (8*EllipticF[(e
- Pi/2 + f*x)/2, 2]*Sqrt[d*Sec[e + f*x]]*Sqrt[Sin[e + f*x]])/(3*b^2*d^2*f*S
qrt[b*Tan[e + f*x]]) - (4*Sqrt[b*Tan[e + f*x]])/(3*b^3*f*(d*Sec[e + f*x])^(
3/2))
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rule 2616

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a^(m + n)*(b*Tan[e + f*x])^n)/((a*Sec[e + f*x])^n*(b
*Sin[e + f*x])^n), Int[(b*Sin[e + f*x])^n/Cos[e + f*x]^(m + n), x], x] /; F
reeQ[{a, b, e, f, m, n}, x] && IntegerQ[n + 1/2] && IntegerQ[m + 1/2]
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 2642

```
Int[1/Sqrt[(b_)*sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Dist[Sqrt[Sin[c + d*
x]]/Sqrt[b*Sin[c + d*x]], Int[1/Sqrt[Sin[c + d*x]], x], x] /; FreeQ[{b, c,
d}, x]
```

Rubi steps

$$\int \frac{1}{(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{5/2}}\,dx = -\frac{2}{3bf(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}} - \frac{2\int \frac{1}{(d\sec(e+fx))^{3/2}\sqrt{b\tan(e+}}}{b^2}$$

$$= -\frac{2}{3bf(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}} - \frac{4\sqrt{b\tan(e+fx)}}{3b^3f(d\sec(e+fx))^{3/2}} -$$

$$= -\frac{2}{3bf(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}} - \frac{4\sqrt{b\tan(e+fx)}}{3b^3f(d\sec(e+fx))^{3/2}} -$$

$$= -\frac{2}{3bf(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}} - \frac{4\sqrt{b\tan(e+fx)}}{3b^3f(d\sec(e+fx))^{3/2}} -$$

$$= -\frac{2}{3bf(d\sec(e+fx))^{3/2}(b\tan(e+fx))^{3/2}} - \frac{8F\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)\sqrt{}}{3b^2d^2f\sqrt{b}}$$

Mathematica [C] time = 2.39, size = 112, normalized size = 0.85

$$\frac{\left(-\tan^2(e+fx)\right)^{3/4}\csc^2(e+fx)\sqrt{b\tan(e+fx)}\left(\sqrt[4]{-\tan^2(e+fx)}\left(\cos(2(e+fx))+2\csc^2(e+fx)-1\right)-8\,{}_2F_1}{3b^3f(d\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*Sec[e + f*x])^(3/2)*(b*Tan[e + f*x])^(5/2)),x]
```

```
[Out] (Csc[e + f*x]^2*Sqrt[b*Tan[e + f*x]]*(-Tan[e + f*x]^2)^(3/4)*(-8*Hypergeome
tric2F1[1/4, 3/4, 5/4, Sec[e + f*x]^2] + (-1 + Cos[2*(e + f*x)] + 2*Csc[e +
 f*x]^2)*(-Tan[e + f*x]^2)^(1/4)))/(3*b^3*f*(d*Sec[e + f*x])^(3/2))
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)}\sqrt{b\tan\left(fx+e\right)}}{b^3d^2\sec\left(fx+e\right)^2\tan\left(fx+e\right)^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(d*sec(f*x + e))*sqrt(b*tan(f*x + e))/(b^3*d^2*sec(f*x + e)^2*
tan(f*x + e)^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\tan\left(fx+e\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*sec(f*x + e))^(3/2)*(b*tan(f*x + e))^(5/2)), x)
```

maple [C] time = 0.62, size = 336, normalized size = 2.55

$$-\frac{\left(4i\sqrt{-\frac{i\left(-1+\cos\left(fx+e\right)\right)}{\sin\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{-\frac{i\cos\left(fx+e\right)-i-\sin\left(fx+e\right)}{\sin\left(fx+e\right)}}\,\text{EllipticF}\left(\sqrt{\frac{i\cos\left(fx+e\right)-i+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}},\frac{\sqrt{2}}{2}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x)
```

```
[Out] -1/3/f*(4*I*cos(f*x+e)*sin(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^
(1/2)*(-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x
```

```
+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*
x+e))^(1/2)+4*I*sin(f*x+e)*((I*cos(f*x+e)-I+sin(f*x+e))/sin(f*x+e))^(1/2)*(
-(I*cos(f*x+e)-I-sin(f*x+e))/sin(f*x+e))^(1/2)*EllipticF(((I*cos(f*x+e)-I+s
in(f*x+e))/sin(f*x+e))^(1/2),1/2*2^(1/2))*(-I*(-1+cos(f*x+e))/sin(f*x+e))^(
1/2)-cos(f*x+e)^3*2^(1/2)+2*cos(f*x+e)*2^(1/2))*sin(f*x+e)/(d/cos(f*x+e))^(
3/2)/(b*sin(f*x+e)/cos(f*x+e))^(5/2)/cos(f*x+e)^4*2^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d \sec \left(fx+e\right)\right)^{\frac{3}{2}} \left(b \tan \left(fx+e\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(3/2)/(b*tan(f*x+e))^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((d*sec(f*x + e))^(3/2)*(b*tan(f*x + e))^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(b \tan \left(e+f\,x\right)\right)^{5/2}\,\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(3/2)/(b*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.334 $\int \frac{1}{(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=106

$$-\frac{64\sqrt{b\tan(e+fx)}}{15b^3d^2f\sqrt{d\sec(e+fx)}}-\frac{16\sqrt{b\tan(e+fx)}}{15b^3f(d\sec(e+fx))^{5/2}}-\frac{2}{3bf(b\tan(e+fx))^{3/2}(d\sec(e+fx))^{5/2}}$$

```
[Out] -16/15*(b*tan(f*x+e))^(1/2)/b^3/f/(d*sec(f*x+e))^(5/2)-64/15*(b*tan(f*x+e))
^(1/2)/b^3/d^2/f/(d*sec(f*x+e))^(1/2)-2/3/b/f/(d*sec(f*x+e))^(5/2)/(b*tan(f
*x+e))^(3/2)
```

Rubi [A] time = 0.17, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {2609, 2612, 2605}

$$-\frac{64\sqrt{b\tan(e+fx)}}{15b^3d^2f\sqrt{d\sec(e+fx)}}-\frac{16\sqrt{b\tan(e+fx)}}{15b^3f(d\sec(e+fx))^{5/2}}-\frac{2}{3bf(b\tan(e+fx))^{3/2}(d\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(5/2)),x]
```

```
[Out] -2/(3*b*f*(d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(3/2)) - (16*Sqrt[b*Tan[e
 + f*x]])/(15*b^3*f*(d*Sec[e + f*x])^(5/2)) - (64*Sqrt[b*Tan[e + f*x]])/(15
*b^3*d^2*f*Sqrt[d*Sec[e + f*x]])
```

Rule 2605

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f
*m), x] /; FreeQ[{a, b, e, f, m, n}, x] && EqQ[m + n + 1, 0]
```

Rule 2609

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*(
n + 1)), x] - Dist[(m + n + 1)/(b^2*(n + 1)), Int[(a*Sec[e + f*x])^m*(b*Tan
[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, e, f, m}, x] && LtQ[n, -1] && In
tegersQ[2*m, 2*n]
```

Rule 2612

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> -Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1))/(b*f*m
```

```
), x] + Dist[(m + n + 1)/(a^2*m), Int[(a*Sec[e + f*x])^(m + 2)*(b*Tan[e + f
*x])^n, x], x] /; FreeQ[{a, b, e, f, n}, x] && (LtQ[m, -1] || (EqQ[m, -1] &
& EqQ[n, -2^(-1)])) && IntegersQ[2*m, 2*n]
```

Rubi steps

$$\int \frac{1}{(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{5/2}}\,dx = -\frac{2}{3bf(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}} - \frac{8\int \frac{1}{(d\sec(e+fx))^{5/2}\sqrt{b\tan(e+fx)}}}{3b^2}$$

$$= -\frac{2}{3bf(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}} - \frac{16\sqrt{b\tan(e+fx)}}{15b^3f(d\sec(e+fx))^{5/2}}$$

$$= -\frac{2}{3bf(d\sec(e+fx))^{5/2}(b\tan(e+fx))^{3/2}} - \frac{16\sqrt{b\tan(e+fx)}}{15b^3f(d\sec(e+fx))^{5/2}}$$

Mathematica [A] time = 3.12, size = 159, normalized size = 1.50

$$\frac{-6\sqrt{\frac{1}{\cos(e+fx)+1}}\,(2\cos(2(e+fx))-1)\tan(e+fx) - 228\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)+1}\,\sqrt{\sec(e+fx)} + \sqrt{\frac{}{\cos}}}{60b^2d^2f\sqrt{\frac{1}{\cos(e+fx)+1}}\,\sqrt{b\tan(e+fx)}\,\sqrt{d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((d*Sec[e + f*x])^(5/2)*(b*Tan[e + f*x])^(5/2)),x]
```

```
[Out] (Sqrt[(1 + Cos[e + f*x])^(-1)]*(-43 + 3*Cos[2*(e + f*x)])*Csc[e + f*x]*Sec[
e + f*x] - 228*Sqrt[Sec[e + f*x]]*Sqrt[1 + Sec[e + f*x]]*Tan[(e + f*x)/2] -
 6*Sqrt[(1 + Cos[e + f*x])^(-1)]*(-1 + 2*Cos[2*(e + f*x)])*Tan[e + f*x])/(6
0*b^2*d^2*f*Sqrt[(1 + Cos[e + f*x])^(-1)]*Sqrt[d*Sec[e + f*x]]*Sqrt[b*Tan[e
 + f*x]])
```

fricas [A] time = 0.68, size = 89, normalized size = 0.84

$$-\frac{2\left(3\cos\left(fx+e\right)^{5} + 24\cos\left(fx+e\right)^{3} - 32\cos\left(fx+e\right)\right)\sqrt{\frac{b\sin\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{\frac{d}{\cos\left(fx+e\right)}}}{15\left(b^3d^3f\cos\left(fx+e\right)^{2} - b^3d^3f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x, algorithm="fricas"
)
```

```
[Out] -2/15*(3*cos(f*x + e)^5 + 24*cos(f*x + e)^3 - 32*cos(f*x + e))*sqrt(b*sin(f
*x + e)/cos(f*x + e))*sqrt(d/cos(f*x + e))/(b^3*d^3*f*cos(f*x + e)^2 - b^3*
d^3*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d \sec\left(fx+e\right)\right)^{\frac{5}{2}} \left(b \tan\left(fx+e\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((d*sec(f*x + e))^(5/2)*(b*tan(f*x + e))^(5/2)), x)
```

maple [A] time = 0.56, size = 72, normalized size = 0.68

$$\frac{2 \sin\left(fx+e\right) \left(3 \left(\cos^{4}\left(fx+e\right)\right)+24 \left(\cos^{2}\left(fx+e\right)\right)-32\right)}{15 f \left(\frac{d}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}} \left(\frac{b \sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}} \cos\left(fx+e\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x)
```

```
[Out] 2/15/f*sin(f*x+e)*(3*cos(f*x+e)^4+24*cos(f*x+e)^2-32)/(d/cos(f*x+e))^(5/2)/
(b*sin(f*x+e)/cos(f*x+e))^(5/2)/cos(f*x+e)^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d \sec\left(fx+e\right)\right)^{\frac{5}{2}} \left(b \tan\left(fx+e\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))^(5/2)/(b*tan(f*x+e))^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/((d*sec(f*x + e))^(5/2)*(b*tan(f*x + e))^(5/2)), x)
```

mupad [**B**] time = 4.35, size = 93, normalized size = 0.88

$$-\frac{\sqrt{\frac{d}{\cos\left(e+f\,x\right)}}\,\left(105\,\sin\left(3\,e+3\,f\,x\right)-410\,\sin\left(e+f\,x\right)+3\,\sin\left(5\,e+5\,f\,x\right)\right)}{60\,b^2\,d^3\,f\,\left(\cos\left(2\,e+2\,f\,x\right)-1\right)\,\sqrt{\frac{b\,\sin\left(2\,e+2\,f\,x\right)}{\cos\left(2\,e+2\,f\,x\right)+1}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((b*tan(e + f*x))^(5/2)*(d/cos(e + f*x))^(5/2)),x)
```

```
[Out] -((d/cos(e + f*x))^(1/2)*(105*sin(3*e + 3*f*x) - 410*sin(e + f*x) + 3*sin(5
*e + 5*f*x)))/(60*b^2*d^3*f*(cos(2*e + 2*f*x) - 1)*((b*sin(2*e + 2*f*x))/(c
os(2*e + 2*f*x) + 1))^(1/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*sec(f*x+e))**(5/2)/(b*tan(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.335 $\int (b\sec(e+fx))^{4/3}\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{2\cos^2(e+fx)^{17/12}(b\sec(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{17}{12};\frac{7}{4};\sin^2(e+fx)\right)}{3df}$$

```
[Out] 2/3*(cos(f*x+e)^2)^(17/12)*hypergeom([3/4, 17/12],[7/4],sin(f*x+e)^2)*(b*se
c(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{2\cos^2(e+fx)^{17/12}(b\sec(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{17}{12};\frac{7}{4};\sin^2(e+fx)\right)}{3df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(4/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(17/12)*Hypergeometric2F1[3/4, 17/12, 7/4, Sin[e + f*x]
^2]*(b*Sec[e + f*x])^(4/3)*(d*Tan[e + f*x])^(3/2))/(3*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (b\sec(e+fx))^{4/3}\sqrt{d\tan(e+fx)}\,dx = \frac{2\cos^2(e+fx)^{17/12}\,{}_2F_1\left(\frac{3}{4},\frac{17}{12};\frac{7}{4};\sin^2(e+fx)\right)(b\sec(e+fx))^{4/3}(d\tan(e}{3df}$$

Mathematica [A] time = 0.10, size = 64, normalized size = 1.00

$$\frac{3d\sqrt[4]{-\tan^2(e+fx)}\,(b\sec(e+fx))^{4/3}\,{}_2F_1\left(\frac{1}{4},\frac{2}{3};\frac{5}{3};\sec^2(e+fx)\right)}{4f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(4/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (3*d*Hypergeometric2F1[1/4, 2/3, 5/3, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(4/3
)*(-Tan[e + f*x]^2)^(1/4))/(4*f*Sqrt[d*Tan[e + f*x]])
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,b\sec\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(1/3)*sqrt(d*tan(f*x + e))*b*sec(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(4/3)*sqrt(d*tan(f*x + e)), x)
```

maple [F] time = 0.58, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] int((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^(4/3)*sqrt(d*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{d\tan\left(e+f\,x\right)}\,\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^{4/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)*(b/cos(e + f*x))^(4/3),x)
[Out] int((d*tan(e + f*x))^(1/2)*(b/cos(e + f*x))^(4/3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(4/3)*(d*tan(f*x+e))**(1/2),x)
[Out] Timed out
```

3.336 $\int \sqrt[3]{b\sec(e+fx)}\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{2\cos^2(e+fx)^{11/12}\sqrt[3]{b\sec(e+fx)}\,(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{11}{12};\frac{7}{4};\sin^2(e+fx)\right)}{3df}$$

```
[Out] 2/3*(cos(f*x+e)^2)^(11/12)*hypergeom([3/4, 11/12],[7/4],sin(f*x+e)^2)*(b*se
c(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2)/d/f
```

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{2\cos^2(e+fx)^{11/12}\sqrt[3]{b\sec(e+fx)}\,(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{11}{12};\frac{7}{4};\sin^2(e+fx)\right)}{3df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(1/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(11/12)*Hypergeometric2F1[3/4, 11/12, 7/4, Sin[e + f*x]
^2]*(b*Sec[e + f*x])^(1/3)*(d*Tan[e + f*x])^(3/2))/(3*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sqrt[3]{b\sec(e+fx)}\sqrt{d\tan(e+fx)}\,dx=\frac{2\cos^2(e+fx)^{11/12}\,{}_2F_1\left(\frac{3}{4},\frac{11}{12};\frac{7}{4};\sin^2(e+fx)\right)\sqrt[3]{b\sec(e+fx)}\,(d\tan(e+$$

Mathematica [A] time = 0.08, size = 62, normalized size = 0.97

$$\frac{3d\sqrt[4]{-\tan^2(e+fx)}\sqrt[3]{b\sec(e+fx)}\,{}_2F_1\left(\frac{1}{6},\frac{1}{4};\frac{7}{6};\sec^2(e+fx)\right)}{f\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(1/3)*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (3*d*Hypergeometric2F1[1/6, 1/4, 7/6, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(1/3
)*(-Tan[e + f*x]^2)^(1/4))/(f*Sqrt[d*Tan[e + f*x]])
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(1/3)*sqrt(d*tan(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(1/3)*sqrt(d*tan(f*x + e)), x)
```

maple [F] time = 0.69, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x)
```

```
[Out] int((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^(1/3)*sqrt(d*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{d\tan\left(e+f\,x\right)}\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^{1/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)*(b/cos(e + f*x))^(1/3),x)
[Out] int((d*tan(e + f*x))^(1/2)*(b/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt[3]{b \sec{\left(e + f x \right)}} \sqrt{d \tan{\left(e + f x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(1/3)*(d*tan(f*x+e))**(1/2),x)
[Out] Integral((b*sec(e + f*x))**(1/3)*sqrt(d*tan(e + f*x)), x)
```

3.337 $\int \frac{\sqrt{d \tan(e+fx)}}{\sqrt[3]{b \sec(e+fx)}} \, dx$

Optimal. Leaf size=64

$$\frac{2 \cos^2(e+fx)^{7/12} (d \tan(e+fx))^{3/2} \, {}_2F_1\left(\frac{7}{12}, \frac{3}{4}; \frac{7}{4}; \sin^2(e+fx)\right)}{3 d f \sqrt[3]{b \sec(e+fx)}}$$

```
[Out] 2/3*(cos(f*x+e)^2)^(7/12)*hypergeom([7/12, 3/4],[7/4],sin(f*x+e)^2)*(d*tan(
f*x+e))^(3/2)/d/f/(b*sec(f*x+e))^(1/3)
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{2 \cos^2(e+fx)^{7/12} (d \tan(e+fx))^{3/2} \, {}_2F_1\left(\frac{7}{12}, \frac{3}{4}; \frac{7}{4}; \sin^2(e+fx)\right)}{3 d f \sqrt[3]{b \sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Tan[e + f*x]]/(b*Sec[e + f*x])^(1/3),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(7/12)*Hypergeometric2F1[7/12, 3/4, 7/4, Sin[e + f*x]^2
]*(d*Tan[e + f*x])^(3/2))/(3*d*f*(b*Sec[e + f*x])^(1/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
 !IntegerQ[(n - 1)/2] && !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sqrt{d \tan(e+fx)}}{\sqrt[3]{b \sec(e+fx)}} \, dx = \frac{2 \cos^2(e+fx)^{7/12} \, {}_2F_1\left(\frac{7}{12}, \frac{3}{4}; \frac{7}{4}; \sin^2(e+fx)\right) (d \tan(e+fx))^{3/2}}{3 d f \sqrt[3]{b \sec(e+fx)}}$$

Mathematica [A] time = 0.10, size = 62, normalized size = 0.97

$$-\frac{3d\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{4};\frac{5}{6};\sec^2(e+fx)\right)}{f\sqrt[3]{b\sec(e+fx)}\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Tan[e + f*x]]/(b*Sec[e + f*x])^(1/3),x]
```

```
[Out] (-3*d*Hypergeometric2F1[-1/6, 1/4, 5/6, Sec[e + f*x]^2]*(-Tan[e + f*x]^2)^(
1/4))/(f*(b*Sec[e + f*x])^(1/3)*Sqrt[d*Tan[e + f*x]])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}}{b\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))/(b*sec(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(f*x + e))/(b*sec(f*x + e))^(1/3), x)
```

maple [F] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(1/3),x)
[Out] int((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))/(b*sec(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{d\tan\left(e+f\,x\right)}}{{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/(b/cos(e + f*x))^(1/3),x)
[Out] int((d*tan(e + f*x))^(1/2)/(b/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(e+fx\right)}}{\sqrt[3]{b\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(1/2)/(b*sec(f*x+e))**(1/3),x)
[Out] Integral(sqrt(d*tan(e + f*x))/(b*sec(e + f*x))**(1/3), x)
```

3.338 $\int \frac{\sqrt{d\tan(e+fx)}}{(b\sec(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=64

$$\frac{2\sqrt[12]{\cos^2(e+fx)}\,(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{7}{4};\sin^2(e+fx)\right)}{3df(b\sec(e+fx))^{4/3}}$$

```
[Out] 2/3*(cos(f*x+e)^2)^(1/12)*hypergeom([1/12, 3/4],[7/4],sin(f*x+e)^2)*(d*tan(
f*x+e))^(3/2)/d/f/(b*sec(f*x+e))^(4/3)
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{2\sqrt[12]{\cos^2(e+fx)}\,(d\tan(e+fx))^{3/2}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{7}{4};\sin^2(e+fx)\right)}{3df(b\sec(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*Tan[e + f*x]]/(b*Sec[e + f*x])^(4/3),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(1/12)*Hypergeometric2F1[1/12, 3/4, 7/4, Sin[e + f*x]^2
]*(d*Tan[e + f*x])^(3/2))/(3*d*f*(b*Sec[e + f*x])^(4/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
 !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sqrt{d\tan(e+fx)}}{(b\sec(e+fx))^{4/3}}\,dx = \frac{2\sqrt[12]{\cos^2(e+fx)}\,{}_2F_1\left(\frac{1}{12},\frac{3}{4};\frac{7}{4};\sin^2(e+fx)\right)(d\tan(e+fx))^{3/2}}{3df(b\sec(e+fx))^{4/3}}$$

Mathematica [A] time = 0.12, size = 64, normalized size = 1.00

$$-\frac{3d\sqrt[4]{-\tan^2(e+fx)}\,{}_2F_1\left(-\frac{2}{3},\frac{1}{4};\frac{1}{3};\sec^2(e+fx)\right)}{4f(b\sec(e+fx))^{4/3}\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*Tan[e + f*x]]/(b*Sec[e + f*x])^(4/3),x]
```

```
[Out] (-3*d*Hypergeometric2F1[-2/3, 1/4, 1/3, Sec[e + f*x]^2]*(-Tan[e + f*x]^2)^(
1/4))/(4*f*(b*Sec[e + f*x])^(4/3)*Sqrt[d*Tan[e + f*x]])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}}{b^2\sec\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))/(b^2*sec(f*x + e)^2),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*tan(f*x + e))/(b*sec(f*x + e))^(4/3), x)
```

maple [F] time = 0.62, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(4/3),x)
```

```
[Out] int((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(4/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(fx+e\right)}}{\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(1/2)/(b*sec(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))/(b*sec(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{d\tan\left(e+f\,x\right)}}{{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)/(b/cos(e + f*x))^(4/3),x)
[Out] int((d*tan(e + f*x))^(1/2)/(b/cos(e + f*x))^(4/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\tan\left(e+fx\right)}}{\left(b\sec\left(e+fx\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(1/2)/(b*sec(f*x+e))**(4/3),x)
[Out] Integral(sqrt(d*tan(e + f*x))/(b*sec(e + f*x))**(4/3), x)
```

3.339 $\int (b\sec(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=64

$$\frac{2\cos^2(e+fx)^{23/12}(b\sec(e+fx))^{4/3}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{23}{12};\frac{9}{4};\sin^2(e+fx)\right)}{5df}$$

```
[Out] 2/5*(cos(f*x+e)^2)^(23/12)*hypergeom([5/4, 23/12],[9/4],sin(f*x+e)^2)*(b*se
c(f*x+e))^(4/3)*(d*tan(f*x+e))^(5/2)/d/f
```

Rubi [A] time = 0.06, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {2617}

$$\frac{2\cos^2(e+fx)^{23/12}(b\sec(e+fx))^{4/3}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{23}{12};\frac{9}{4};\sin^2(e+fx)\right)}{5df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(4/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(23/12)*Hypergeometric2F1[5/4, 23/12, 9/4, Sin[e + f*x]
^2]*(b*Sec[e + f*x])^(4/3)*(d*Tan[e + f*x])^(5/2))/(5*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (b\sec(e+fx))^{4/3}(d\tan(e+fx))^{3/2}\,dx = \frac{2\cos^2(e+fx)^{23/12}\,{}_2F_1\left(\frac{5}{4},\frac{23}{12};\frac{9}{4};\sin^2(e+fx)\right)(b\sec(e+fx))^{4/3}(d\tan(}{5df}$$

Mathematica [A] time = 0.15, size = 64, normalized size = 1.00

$$\frac{3d(b\sec(e+fx))^{4/3}\sqrt{d\tan(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{2}{3};\frac{5}{3};\sec^2(e+fx)\right)}{4f\sqrt[4]{-\tan^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(4/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (3*d*Hypergeometric2F1[-1/4, 2/3, 5/3, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(4/
3)*Sqrt[d*Tan[e + f*x]])/(4*f*(-Tan[e + f*x]^2)^(1/4))
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,bd\sec\left(fx+e\right)\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(1/3)*sqrt(d*tan(f*x + e))*b*d*sec(f*x + e)*tan(f
*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(4/3)*(d*tan(f*x + e))^(3/2), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x)
```

```
[Out] int((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(4/3)*(d*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^(4/3)*(d*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(d\tan\left(e+f\,x\right)\right)^{3/2}\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^{4/3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(3/2)*(b/cos(e + f*x))^(4/3),x)
[Out] int((d*tan(e + f*x))^(3/2)*(b/cos(e + f*x))^(4/3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(4/3)*(d*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.340 $\int \sqrt[3]{b\sec(e+fx)}\,(d\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=64

$$\frac{2\cos^2(e+fx)^{17/12}\sqrt[3]{b\sec(e+fx)}\,(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{17}{12};\frac{9}{4};\sin^2(e+fx)\right)}{5df}$$

```
[Out] 2/5*(cos(f*x+e)^2)^(17/12)*hypergeom([5/4, 17/12],[9/4],sin(f*x+e)^2)*(b*se
c(f*x+e))^(1/3)*(d*tan(f*x+e))^(5/2)/d/f
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{2\cos^2(e+fx)^{17/12}\sqrt[3]{b\sec(e+fx)}\,(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{5}{4},\frac{17}{12};\frac{9}{4};\sin^2(e+fx)\right)}{5df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(1/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(17/12)*Hypergeometric2F1[5/4, 17/12, 9/4, Sin[e + f*x]
^2]*(b*Sec[e + f*x])^(1/3)*(d*Tan[e + f*x])^(5/2))/(5*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
 !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sqrt[3]{b\sec(e+fx)}\,(d\tan(e+fx))^{3/2}\,dx = \frac{2\cos^2(e+fx)^{17/12}\,{}_2F_1\left(\frac{5}{4},\frac{17}{12};\frac{9}{4};\sin^2(e+fx)\right)\sqrt[3]{b\sec(e+fx)}\,(d\tan(e$$

Mathematica [A] time = 0.14, size = 62, normalized size = 0.97

$$\frac{3d\sqrt[3]{b\sec(e+fx)}\,\sqrt{d\tan(e+fx)}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{6};\frac{7}{6};\sec^2(e+fx)\right)}{f\sqrt[4]{-\tan^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(1/3)*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (3*d*Hypergeometric2F1[-1/4, 1/6, 7/6, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(1/
3)*Sqrt[d*Tan[e + f*x]])/(f*(-Tan[e + f*x]^2)^(1/4))
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\sqrt{d\tan\left(fx+e\right)}\,d\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(1/3)*sqrt(d*tan(f*x + e))*d*tan(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(1/3)*(d*tan(f*x + e))^(3/2), x)
```

maple [F] time = 0.51, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x)
```

```
[Out] int((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/3)*(d*tan(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^(1/3)*(d*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(d\tan\left(e+f\,x\right)\right)^{3/2}\,\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^{1/3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(3/2)*(b/cos(e + f*x))^(1/3),x)
[Out] int((d*tan(e + f*x))^(3/2)*(b/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt[3]{b\sec\left(e+fx\right)}\left(d\tan\left(e+fx\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(1/3)*(d*tan(f*x+e))**(3/2),x)
[Out] Integral((b*sec(e + f*x))**(1/3)*(d*tan(e + f*x))**(3/2), x)
```

3.341 $\int \frac{(d\tan(e+fx))^{3/2}}{\sqrt[3]{b\sec(e+fx)}}\,dx$

Optimal. Leaf size=64

$$\frac{2\cos^2(e+fx)^{13/12}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{13}{12},\frac{5}{4};\frac{9}{4};\sin^2(e+fx)\right)}{5df\sqrt[3]{b\sec(e+fx)}}$$

```
[Out] 2/5*(cos(f*x+e)^2)^(13/12)*hypergeom([13/12, 5/4],[9/4],sin(f*x+e)^2)*(d*ta
n(f*x+e))^(5/2)/d/f/(b*sec(f*x+e))^(1/3)
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{2\cos^2(e+fx)^{13/12}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{13}{12},\frac{5}{4};\frac{9}{4};\sin^2(e+fx)\right)}{5df\sqrt[3]{b\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[e + f*x])^(3/2)/(b*Sec[e + f*x])^(1/3),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(13/12)*Hypergeometric2F1[13/12, 5/4, 9/4, Sin[e + f*x]
^2]*(d*Tan[e + f*x])^(5/2))/(5*d*f*(b*Sec[e + f*x])^(1/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{(d\tan(e+fx))^{3/2}}{\sqrt[3]{b\sec(e+fx)}}\,dx = \frac{2\cos^2(e+fx)^{13/12}\,{}_2F_1\left(\frac{13}{12},\frac{5}{4};\frac{9}{4};\sin^2(e+fx)\right)(d\tan(e+fx))^{5/2}}{5df\sqrt[3]{b\sec(e+fx)}}$$

Mathematica [A] time = 0.08, size = 69, normalized size = 1.08

$$\frac{3\left(-\tan^2(e+fx)\right)^{3/4}\cot^3(e+fx)(d\tan(e+fx))^{3/2}\,{}_2F_1\left(-\frac{1}{4},-\frac{1}{6};\frac{5}{6};\sec^2(e+fx)\right)}{f\sqrt[3]{b\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[e + f*x])^(3/2)/(b*Sec[e + f*x])^(1/3),x]
```

```
[Out] (3*Cot[e + f*x]^3*Hypergeometric2F1[-1/4, -1/6, 5/6, Sec[e + f*x]^2]*(d*Tan
[e + f*x])^(3/2)*(-Tan[e + f*x]^2)^(3/4))/(f*(b*Sec[e + f*x])^(1/3))
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}\,d\tan\left(fx+e\right)}{b\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))*d*tan(f*x + e)/(b*sec(
f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate((d*tan(f*x + e))^(3/2)/(b*sec(f*x + e))^(1/3), x)
```

maple [F] time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(1/3),x)
```

```
[Out] int((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b \sec\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate((d*tan(f*x + e))^(3/2)/(b*sec(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(d \tan\left(e+f\,x\right)\right)^{3/2}}{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(3/2)/(b/cos(e + f*x))^(1/3),x)
[Out] int((d*tan(e + f*x))^(3/2)/(b/cos(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d \tan\left(e+fx\right)\right)^{\frac{3}{2}}}{\sqrt[3]{b \sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(3/2)/(b*sec(f*x+e))**(1/3),x)
[Out] Integral((d*tan(e + f*x))**(3/2)/(b*sec(e + f*x))**(1/3), x)
```

3.342 $\int \frac{(d\tan(e+fx))^{3/2}}{(b\sec(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=64

$$\frac{2\cos^2(e+fx)^{7/12}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{7}{12},\frac{5}{4};\frac{9}{4};\sin^2(e+fx)\right)}{5df(b\sec(e+fx))^{4/3}}$$

```
[Out] 2/5*(cos(f*x+e)^2)^(7/12)*hypergeom([7/12, 5/4],[9/4],sin(f*x+e)^2)*(d*tan(
f*x+e))^(5/2)/d/f/(b*sec(f*x+e))^(4/3)
```

Rubi [A] time = 0.06, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{2\cos^2(e+fx)^{7/12}(d\tan(e+fx))^{5/2}\,{}_2F_1\left(\frac{7}{12},\frac{5}{4};\frac{9}{4};\sin^2(e+fx)\right)}{5df(b\sec(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[e + f*x])^(3/2)/(b*Sec[e + f*x])^(4/3),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(7/12)*Hypergeometric2F1[7/12, 5/4, 9/4, Sin[e + f*x]^2
]*(d*Tan[e + f*x])^(5/2))/(5*d*f*(b*Sec[e + f*x])^(4/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{(d\tan(e+fx))^{3/2}}{(b\sec(e+fx))^{4/3}}\,dx = \frac{2\cos^2(e+fx)^{7/12}\,{}_2F_1\left(\frac{7}{12},\frac{5}{4};\frac{9}{4};\sin^2(e+fx)\right)(d\tan(e+fx))^{5/2}}{5df(b\sec(e+fx))^{4/3}}$$

Mathematica [A] time = 0.08, size = 71, normalized size = 1.11

$$\frac{3\left(-\tan^2(e+fx)\right)^{3/4}\cot^3(e+fx)(d\tan(e+fx))^{3/2}\,{}_2F_1\left(-\frac{2}{3},-\frac{1}{4};\frac{1}{3};\sec^2(e+fx)\right)}{4f(b\sec(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[e + f*x])^(3/2)/(b*Sec[e + f*x])^(4/3),x]
```

```
[Out] (3*Cot[e + f*x]^3*Hypergeometric2F1[-2/3, -1/4, 1/3, Sec[e + f*x]^2]*(d*Tan
[e + f*x])^(3/2)*(-Tan[e + f*x]^2)^(3/4))/(4*f*(b*Sec[e + f*x])^(4/3))
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{2}{3}}\sqrt{d\tan\left(fx+e\right)}\,d\tan\left(fx+e\right)}{b^{2}\sec\left(fx+e\right)^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^(2/3)*sqrt(d*tan(f*x + e))*d*tan(f*x + e)/(b^2*se
c(f*x + e)^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] integrate((d*tan(f*x + e))^(3/2)/(b*sec(f*x + e))^(4/3), x)
```

maple [F] time = 0.60, size = 0, normalized size = 0.00

$$\int \frac{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(4/3),x)
```

```
[Out] int((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(4/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))^(3/2)/(b*sec(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate((d*tan(f*x + e))^(3/2)/(b*sec(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(d\tan\left(e+f\,x\right)\right)^{3/2}}{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(3/2)/(b/cos(e + f*x))^(4/3),x)
[Out] int((d*tan(e + f*x))^(3/2)/(b/cos(e + f*x))^(4/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\tan\left(e+fx\right)\right)^{\frac{3}{2}}}{\left(b\sec\left(e+fx\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(f*x+e))**(3/2)/(b*sec(f*x+e))**(4/3),x)
[Out] Integral((d*tan(e + f*x))**(3/2)/(b*sec(e + f*x))**(4/3), x)
```

3.343 $\int \sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{4/3}\,dx$

Optimal. Leaf size=64

$$\frac{3\cos^2(e+fx)^{17/12}\sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{17}{12};\frac{13}{6};\sin^2(e+fx)\right)}{7df}$$

```
[Out] 3/7*(cos(f*x+e)^2)^(17/12)*hypergeom([7/6, 17/12],[13/6],sin(f*x+e)^2)*(b*s
ec(f*x+e))^(1/2)*(d*tan(f*x+e))^(7/3)/d/f
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{3\cos^2(e+fx)^{17/12}\sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{17}{12};\frac{13}{6};\sin^2(e+fx)\right)}{7df}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sec[e + f*x]]*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (3*(Cos[e + f*x]^2)^(17/12)*Hypergeometric2F1[7/6, 17/12, 13/6, Sin[e + f*x
]^2]*Sqrt[b*Sec[e + f*x]]*(d*Tan[e + f*x])^(7/3))/(7*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{4/3}\,dx = \frac{3\cos^2(e+fx)^{17/12}\,{}_2F_1\left(\frac{7}{6},\frac{17}{12};\frac{13}{6};\sin^2(e+fx)\right)\sqrt{b\sec(e+fx)}\,(d\tan(e}{7df}$$

Mathematica [A] time = 0.14, size = 62, normalized size = 0.97

$$\frac{2d\sqrt{b\sec(e+fx)}\,\sqrt[3]{d\tan(e+fx)}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{4};\frac{5}{4};\sec^2(e+fx)\right)}{f\sqrt[6]{-\tan^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sec[e + f*x]]*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[-1/6, 1/4, 5/4, Sec[e + f*x]^2]*Sqrt[b*Sec[e + f*x]]
*(d*Tan[e + f*x])^(1/3))/(f*(-Tan[e + f*x]^2)^(1/6))
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b \sec\left(fx+e\right)} \left(d \tan\left(fx+e\right)\right)^{\frac{1}{3}} d \tan\left(fx+e\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(1/3)*d*tan(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \sec\left(fx+e\right)} \left(d \tan\left(fx+e\right)\right)^{\frac{4}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(4/3), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \sqrt{b \sec\left(fx+e\right)} \left(d \tan\left(fx+e\right)\right)^{\frac{4}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x)
```

```
[Out] int((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b \sec\left(fx+e\right)} \left(d \tan\left(fx+e\right)\right)^{\frac{4}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(d\tan\left(e+fx\right)\right)^{4/3}\sqrt{\frac{b}{\cos\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(4/3)*(b/cos(e + f*x))^(1/2),x)
[Out] int((d*tan(e + f*x))^(4/3)*(b/cos(e + f*x))^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(1/2)*(d*tan(f*x+e))**(4/3),x)
[Out] Timed out
```

3.344 $\int \sqrt{b\sec(e+fx)}\,\sqrt[3]{d\tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{3\cos^2(e+fx)^{11/12}\sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{11}{12};\frac{5}{3};\sin^2(e+fx)\right)}{4df}$$

```
[Out] 3/4*(cos(f*x+e)^2)^(11/12)*hypergeom([2/3, 11/12],[5/3],sin(f*x+e)^2)*(b*se
c(f*x+e))^(1/2)*(d*tan(f*x+e))^(4/3)/d/f
```

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{3\cos^2(e+fx)^{11/12}\sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{11}{12};\frac{5}{3};\sin^2(e+fx)\right)}{4df}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sec[e + f*x]]*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (3*(Cos[e + f*x]^2)^(11/12)*Hypergeometric2F1[2/3, 11/12, 5/3, Sin[e + f*x]
^2]*Sqrt[b*Sec[e + f*x]]*(d*Tan[e + f*x])^(4/3))/(4*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sqrt{b\sec(e+fx)}\,\sqrt[3]{d\tan(e+fx)}\,dx=\frac{3\cos^2(e+fx)^{11/12}\,{}_2F_1\left(\frac{2}{3},\frac{11}{12};\frac{5}{3};\sin^2(e+fx)\right)\sqrt{b\sec(e+fx)}\,(d\tan(e+$$
$$4df$$

Mathematica [A] time = 0.09, size = 62, normalized size = 0.97

$$\frac{2d\sqrt[3]{-\tan^2(e+fx)}\,\sqrt{b\sec(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{1}{3};\frac{5}{4};\sec^2(e+fx)\right)}{f(d\tan(e+fx))^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sec[e + f*x]]*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[1/4, 1/3, 5/4, Sec[e + f*x]^2]*Sqrt[b*Sec[e + f*x]]*
(-Tan[e + f*x]^2)^(1/3))/(f*(d*Tan[e + f*x])^(2/3))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\sec\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(1/3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{b\sec\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(1/3), x)
```

maple [F] time = 0.69, size = 0, normalized size = 0.00

$$\int\sqrt{b\sec\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x)
```

```
[Out] int((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{b\sec\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)*(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(d\tan\left(e+f\,x\right)\right)^{1/3}\,\sqrt{\frac{b}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/3)*(b/cos(e + f*x))^(1/2),x)
[Out] int((d*tan(e + f*x))^(1/3)*(b/cos(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b\sec\left(e+fx\right)}\,\sqrt[3]{d\tan\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(1/2)*(d*tan(f*x+e))**(1/3),x)
[Out] Integral(sqrt(b*sec(e + f*x))*(d*tan(e + f*x))**(1/3), x)
```

3.345 $\int \frac{\sqrt{b\sec(e+fx)}}{\sqrt[3]{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=64

$$\frac{3\cos^2(e+fx)^{7/12}\sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{7}{12};\frac{4}{3};\sin^2(e+fx)\right)}{2df}$$

```
[Out] 3/2*(cos(f*x+e)^2)^(7/12)*hypergeom([1/3, 7/12],[4/3],sin(f*x+e)^2)*(b*sec(
f*x+e))^(1/2)*(d*tan(f*x+e))^(2/3)/d/f
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{3\cos^2(e+fx)^{7/12}\sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{7}{12};\frac{4}{3};\sin^2(e+fx)\right)}{2df}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sec[e + f*x]]/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (3*(Cos[e + f*x]^2)^(7/12)*Hypergeometric2F1[1/3, 7/12, 4/3, Sin[e + f*x]^2
]*Sqrt[b*Sec[e + f*x]]*(d*Tan[e + f*x])^(2/3))/(2*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
 !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sqrt{b\sec(e+fx)}}{\sqrt[3]{d\tan(e+fx)}}\,dx = \frac{3\cos^2(e+fx)^{7/12}\,{}_2F_1\left(\frac{1}{3},\frac{7}{12};\frac{4}{3};\sin^2(e+fx)\right)\sqrt{b\sec(e+fx)}\,(d\tan(e+fx))^{2/3}}{2df}$$

Mathematica [A] time = 0.12, size = 62, normalized size = 0.97

$$\frac{2d\left(-\tan^2(e+fx)\right)^{2/3}\sqrt{b\sec(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{2}{3};\frac{5}{4};\sec^2(e+fx)\right)}{f(d\tan(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sec[e + f*x]]/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[1/4, 2/3, 5/4, Sec[e + f*x]^2]*Sqrt[b*Sec[e + f*x]]*
(-Tan[e + f*x]^2)^(2/3))/(f*(d*Tan[e + f*x])^(4/3))
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sec\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(2/3)/(d*tan(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*sec(f*x + e))/(d*tan(f*x + e))^(1/3), x)
```

maple [F] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x)
```

```
[Out] int((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate(sqrt(b*sec(f*x + e))/(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{\frac{b}{\cos\left(e+f\,x\right)}}}{\left(d\,\tan\left(e+f\,x\right)\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b/cos(e + f*x))^(1/2)/(d*tan(e + f*x))^(1/3),x)
[Out] int((b/cos(e + f*x))^(1/2)/(d*tan(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(e+fx\right)}}{\sqrt[3]{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(1/2)/(d*tan(f*x+e))**(1/3),x)
[Out] Integral(sqrt(b*sec(e + f*x))/(d*tan(e + f*x))**(1/3), x)
```

3.346 $\int \frac{\sqrt{b\sec(e+fx)}}{(d\tan(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=62

$$-\frac{3\sqrt[12]{\cos^2(e+fx)}\sqrt{b\sec(e+fx)}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{12};\frac{5}{6};\sin^2(e+fx)\right)}{df\sqrt[3]{d\tan(e+fx)}}$$

```
[Out] -3*(cos(f*x+e)^2)^(1/12)*hypergeom([-1/6, 1/12],[5/6],sin(f*x+e)^2)*(b*sec(
f*x+e))^(1/2)/d/f/(d*tan(f*x+e))^(1/3)
```

Rubi [A] time = 0.05, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$-\frac{3\sqrt[12]{\cos^2(e+fx)}\sqrt{b\sec(e+fx)}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{12};\frac{5}{6};\sin^2(e+fx)\right)}{df\sqrt[3]{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[b*Sec[e + f*x]]/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (-3*(Cos[e + f*x]^2)^(1/12)*Hypergeometric2F1[-1/6, 1/12, 5/6, Sin[e + f*x]
^2]*Sqrt[b*Sec[e + f*x]])/(d*f*(d*Tan[e + f*x])^(1/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{\sqrt{b\sec(e+fx)}}{(d\tan(e+fx))^{4/3}}\,dx=-\frac{3\sqrt[12]{\cos^2(e+fx)}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{12};\frac{5}{6};\sin^2(e+fx)\right)\sqrt{b\sec(e+fx)}}{df\sqrt[3]{d\tan(e+fx)}}$$

Mathematica [A] time = 0.23, size = 62, normalized size = 1.00

$$\frac{2d\left(-\tan^2(e+fx)\right)^{7/6}\sqrt{b\sec(e+fx)}\,{}_2F_1\left(\frac{1}{4},\frac{7}{6};\frac{5}{4};\sec^2(e+fx)\right)}{f(d\tan(e+fx))^{7/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[b*Sec[e + f*x]]/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[1/4, 7/6, 5/4, Sec[e + f*x]^2]*Sqrt[b*Sec[e + f*x]]*
(-Tan[e + f*x]^2)^(7/6))/(f*(d*Tan[e + f*x])^(7/3))
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sec\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}}{d^2\tan\left(fx+e\right)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(2/3)/(d^2*tan(f*x + e)^2),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*sec(f*x + e))/(d*tan(f*x + e))^(4/3), x)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x)
```

```
[Out] int((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(fx+e\right)}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(1/2)/(d*tan(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate(sqrt(b*sec(f*x + e))/(d*tan(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{\frac{b}{\cos\left(e+f\,x\right)}}}{\left(d\tan\left(e+f\,x\right)\right)^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b/cos(e + f*x))^(1/2)/(d*tan(e + f*x))^(4/3),x)
[Out] int((b/cos(e + f*x))^(1/2)/(d*tan(e + f*x))^(4/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\sec\left(e+fx\right)}}{\left(d\tan\left(e+fx\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(1/2)/(d*tan(f*x+e))**(4/3),x)
[Out] Integral(sqrt(b*sec(e + f*x))/(d*tan(e + f*x))**(4/3), x)
```

3.347 $\int (b\sec(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,dx$

Optimal. Leaf size=64

$$\frac{3\cos^2(e+fx)^{23/12}(b\sec(e+fx))^{3/2}(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{23}{12};\frac{13}{6};\sin^2(e+fx)\right)}{7df}$$

```
[Out] 3/7*(cos(f*x+e)^2)^(23/12)*hypergeom([7/6, 23/12],[13/6],sin(f*x+e)^2)*(b*s
ec(f*x+e))^(3/2)*(d*tan(f*x+e))^(7/3)/d/f
```

Rubi [A] time = 0.06, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{3\cos^2(e+fx)^{23/12}(b\sec(e+fx))^{3/2}(d\tan(e+fx))^{7/3}\,{}_2F_1\left(\frac{7}{6},\frac{23}{12};\frac{13}{6};\sin^2(e+fx)\right)}{7df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(3/2)*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (3*(Cos[e + f*x]^2)^(23/12)*Hypergeometric2F1[7/6, 23/12, 13/6, Sin[e + f*x
]^2]*(b*Sec[e + f*x])^(3/2)*(d*Tan[e + f*x])^(7/3))/(7*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
 !IntegerQ[(n - 1)/2] && !IntegerQ[m/2]
```

Rubi steps

$$\int (b\sec(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,dx=\frac{3\cos^2(e+fx)^{23/12}\,{}_2F_1\left(\frac{7}{6},\frac{23}{12};\frac{13}{6};\sin^2(e+fx)\right)(b\sec(e+fx))^{3/2}(d\tan}{7df}$$

Mathematica [A] time = 0.15, size = 64, normalized size = 1.00

$$\frac{2d(b\sec(e+fx))^{3/2}\sqrt[3]{d\tan(e+fx)}\,{}_2F_1\left(-\frac{1}{6},\frac{3}{4};\frac{7}{4};\sec^2(e+fx)\right)}{3f\sqrt[6]{-\tan^2(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(3/2)*(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[-1/6, 3/4, 7/4, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(3/
2)*(d*Tan[e + f*x])^(1/3))/(3*f*(-Tan[e + f*x]^2)^(1/6))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\sec\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}bd\sec\left(fx+e\right)\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(1/3)*b*d*sec(f*x + e)*tan(f
*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(3/2)*(d*tan(f*x + e))^(4/3), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x)
```

```
[Out] int((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^(3/2)*(d*tan(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(d\tan\left(e+f\,x\right)\right)^{4/3}\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(4/3)*(b/cos(e + f*x))^(3/2),x)
[Out] int((d*tan(e + f*x))^(4/3)*(b/cos(e + f*x))^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(3/2)*(d*tan(f*x+e))**(4/3),x)
[Out] Timed out
```

3.348 $\int (b\sec(e+fx))^{3/2}\sqrt[3]{d\tan(e+fx)}\,dx$

Optimal. Leaf size=64

$$\frac{3\cos^2(e+fx)^{17/12}(b\sec(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{17}{12};\frac{5}{3};\sin^2(e+fx)\right)}{4df}$$

```
[Out] 3/4*(cos(f*x+e)^2)^(17/12)*hypergeom([2/3, 17/12],[5/3],sin(f*x+e)^2)*(b*se
c(f*x+e))^(3/2)*(d*tan(f*x+e))^(4/3)/d/f
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{3\cos^2(e+fx)^{17/12}(b\sec(e+fx))^{3/2}(d\tan(e+fx))^{4/3}\,{}_2F_1\left(\frac{2}{3},\frac{17}{12};\frac{5}{3};\sin^2(e+fx)\right)}{4df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(3/2)*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (3*(Cos[e + f*x]^2)^(17/12)*Hypergeometric2F1[2/3, 17/12, 5/3, Sin[e + f*x]
^2]*(b*Sec[e + f*x])^(3/2)*(d*Tan[e + f*x])^(4/3))/(4*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (b\sec(e+fx))^{3/2}\sqrt[3]{d\tan(e+fx)}\,dx=\frac{3\cos^2(e+fx)^{17/12}\,{}_2F_1\left(\frac{2}{3},\frac{17}{12};\frac{5}{3};\sin^2(e+fx)\right)(b\sec(e+fx))^{3/2}(d\tan(}{4df}$$

Mathematica [A] time = 0.09, size = 64, normalized size = 1.00

$$\frac{2d\sqrt[3]{-\tan^2(e+fx)}\,(b\sec(e+fx))^{3/2}\,{}_2F_1\left(\frac{1}{3},\frac{3}{4};\frac{7}{4};\sec^2(e+fx)\right)}{3f(d\tan(e+fx))^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(3/2)*(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[1/3, 3/4, 7/4, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(3/2
)*(-Tan[e + f*x]^2)^(1/3))/(3*f*(d*Tan[e + f*x])^(2/3))
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{b\sec\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}b\sec\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(1/3)*b*sec(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(3/2)*(d*tan(f*x + e))^(1/3), x)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x)
```

```
[Out] int((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)*(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^(3/2)*(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(d\tan\left(e+fx\right)\right)^{1/3}\left(\frac{b}{\cos\left(e+fx\right)}\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/3)*(b/cos(e + f*x))^(3/2),x)
[Out] int((d*tan(e + f*x))^(1/3)*(b/cos(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(e+fx\right)\right)^{\frac{3}{2}}\sqrt[3]{d\tan\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(3/2)*(d*tan(f*x+e))**(1/3),x)
[Out] Integral((b*sec(e + f*x))**(3/2)*(d*tan(e + f*x))**(1/3), x)
```

3.349 $\int \frac{(b\sec(e+fx))^{3/2}}{\sqrt[3]{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=64

$$\frac{3\cos^2(e+fx)^{13/12}(b\sec(e+fx))^{3/2}(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{13}{12};\frac{4}{3};\sin^2(e+fx)\right)}{2df}$$

```
[Out] 3/2*(cos(f*x+e)^2)^(13/12)*hypergeom([1/3, 13/12],[4/3],sin(f*x+e)^2)*(b*se
c(f*x+e))^(3/2)*(d*tan(f*x+e))^(2/3)/d/f
```

Rubi [A] time = 0.06, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$\frac{3\cos^2(e+fx)^{13/12}(b\sec(e+fx))^{3/2}(d\tan(e+fx))^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{13}{12};\frac{4}{3};\sin^2(e+fx)\right)}{2df}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(3/2)/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (3*(Cos[e + f*x]^2)^(13/12)*Hypergeometric2F1[1/3, 13/12, 4/3, Sin[e + f*x]
^2]*(b*Sec[e + f*x])^(3/2)*(d*Tan[e + f*x])^(2/3))/(2*d*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{(b\sec(e+fx))^{3/2}}{\sqrt[3]{d\tan(e+fx)}}\,dx = \frac{3\cos^2(e+fx)^{13/12}\,{}_2F_1\left(\frac{1}{3},\frac{13}{12};\frac{4}{3};\sin^2(e+fx)\right)(b\sec(e+fx))^{3/2}(d\tan(e+fx))^{2/3}}{2df}$$

Mathematica [A] time = 0.11, size = 64, normalized size = 1.00

$$\frac{2d\left(-\tan^2(e+fx)\right)^{2/3}(b\sec(e+fx))^{3/2}\,{}_2F_1\left(\frac{2}{3},\frac{3}{4};\frac{7}{4};\sec^2(e+fx)\right)}{3f(d\tan(e+fx))^{4/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(3/2)/(d*Tan[e + f*x])^(1/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[2/3, 3/4, 7/4, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(3/2
)*(-Tan[e + f*x]^2)^(2/3))/(3*f*(d*Tan[e + f*x])^(4/3))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{b\sec\left(fx+e\right)}\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}b\sec\left(fx+e\right)}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(2/3)*b*sec(f*x + e)/(d*tan(
f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(3/2)/(d*tan(f*x + e))^(1/3), x)
```

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x)
```

```
[Out] int((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(1/3),x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e))^(3/2)/(d*tan(f*x + e))^(1/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(d\tan\left(e+f\,x\right)\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b/cos(e + f*x))^(3/2)/(d*tan(e + f*x))^(1/3),x)
[Out] int((b/cos(e + f*x))^(3/2)/(d*tan(e + f*x))^(1/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\sec\left(e+fx\right)\right)^{\frac{3}{2}}}{\sqrt[3]{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(3/2)/(d*tan(f*x+e))**(1/3),x)
[Out] Integral((b*sec(e + f*x))**(3/2)/(d*tan(e + f*x))**(1/3), x)
```

3.350 $\int \frac{(b\sec(e+fx))^{3/2}}{(d\tan(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=62

$$-\frac{3\cos^2(e+fx)^{7/12}(b\sec(e+fx))^{3/2}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{12};\frac{5}{6};\sin^2(e+fx)\right)}{df\sqrt[3]{d\tan(e+fx)}}$$

```
[Out] -3*(cos(f*x+e)^2)^(7/12)*hypergeom([-1/6, 7/12],[5/6],sin(f*x+e)^2)*(b*sec(
f*x+e))^(3/2)/d/f/(d*tan(f*x+e))^(1/3)
```

Rubi [A] time = 0.06, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {2617}

$$-\frac{3\cos^2(e+fx)^{7/12}(b\sec(e+fx))^{3/2}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{12};\frac{5}{6};\sin^2(e+fx)\right)}{df\sqrt[3]{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^(3/2)/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (-3*(Cos[e + f*x]^2)^(7/12)*Hypergeometric2F1[-1/6, 7/12, 5/6, Sin[e + f*x]
^2]*(b*Sec[e + f*x])^(3/2))/(d*f*(d*Tan[e + f*x])^(1/3))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \frac{(b\sec(e+fx))^{3/2}}{(d\tan(e+fx))^{4/3}}\,dx = -\frac{3\cos^2(e+fx)^{7/12}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{12};\frac{5}{6};\sin^2(e+fx)\right)(b\sec(e+fx))^{3/2}}{df\sqrt[3]{d\tan(e+fx)}}$$

Mathematica [A] time = 0.21, size = 64, normalized size = 1.03

$$\frac{2d\left(-\tan^2(e+fx)\right)^{7/6}(b\sec(e+fx))^{3/2}\,{}_2F_1\left(\frac{3}{4},\frac{7}{6};\frac{7}{4};\sec^2(e+fx)\right)}{3f(d\tan(e+fx))^{7/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^(3/2)/(d*Tan[e + f*x])^(4/3),x]
```

```
[Out] (2*d*Hypergeometric2F1[3/4, 7/6, 7/4, Sec[e + f*x]^2]*(b*Sec[e + f*x])^(3/2
)*(-Tan[e + f*x]^2)^(7/6))/(3*f*(d*Tan[e + f*x])^(7/3))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sec\left(fx+e\right)}\,\left(d\tan\left(fx+e\right)\right)^{\frac{2}{3}}b\sec\left(fx+e\right)}{d^2\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e))*(d*tan(f*x + e))^(2/3)*b*sec(f*x + e)/(d^2*ta
n(f*x + e)^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^(3/2)/(d*tan(f*x + e))^(4/3), x)
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int\frac{\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x)
```

```
[Out] int((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\sec\left(fx+e\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^(3/2)/(d*tan(f*x+e))^(4/3),x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e))^(3/2)/(d*tan(f*x + e))^(4/3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(d\tan\left(e+f\,x\right)\right)^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b/cos(e + f*x))^(3/2)/(d*tan(e + f*x))^(4/3),x)
[Out] int((b/cos(e + f*x))^(3/2)/(d*tan(e + f*x))^(4/3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\sec\left(e+fx\right)\right)^{\frac{3}{2}}}{\left(d\tan\left(e+fx\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**(3/2)/(d*tan(f*x+e))**(4/3),x)
[Out] Integral((b*sec(e + f*x))**(3/2)/(d*tan(e + f*x))**(4/3), x)
```

3.351 $\int (b\sec(e+fx))^m \tan^5(e+fx)\,dx$

Optimal. Leaf size=67

$$\frac{(b\sec(e+fx))^{m+4}}{b^4f(m+4)}-\frac{2(b\sec(e+fx))^{m+2}}{b^2f(m+2)}+\frac{(b\sec(e+fx))^m}{fm}$$

```
[Out] (b*sec(f*x+e))^m/f/m-2*(b*sec(f*x+e))^(2+m)/b^2/f/(2+m)+(b*sec(f*x+e))^(4+m
)/b^4/f/(4+m)
```

Rubi [A] time = 0.06, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2606, 270}

$$-\frac{2(b\sec(e+fx))^{m+2}}{b^2f(m+2)}+\frac{(b\sec(e+fx))^{m+4}}{b^4f(m+4)}+\frac{(b\sec(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^m*Tan[e + f*x]^5,x]
```

```
[Out] (b*Sec[e + f*x])^m/(f*m) - (2*(b*Sec[e + f*x])^(2 + m))/(b^2*f*(2 + m)) + (
b*Sec[e + f*x])^(4 + m)/(b^4*f*(4 + m))
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 && !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\int (b\sec(e+fx))^m\tan^5(e+fx)\,dx=\frac{b\,\mathrm{Subst}\left(\int (bx)^{-1+m}\left(-1+x^2\right)^2\,dx,x,\sec(e+fx)\right)}{f}$$
$$=\frac{b\,\mathrm{Subst}\left(\int \left((bx)^{-1+m}-\frac{2(bx)^{1+m}}{b^2}+\frac{(bx)^{3+m}}{b^4}\right)dx,x,\sec(e+fx)\right)}{f}$$
$$=\frac{(b\sec(e+fx))^m}{fm}-\frac{2(b\sec(e+fx))^{2+m}}{b^2f(2+m)}+\frac{(b\sec(e+fx))^{4+m}}{b^4f(4+m)}$$

Mathematica [A] time = 0.38, size = 47, normalized size = 0.70

$$\frac{\left(\frac{\sec^4(e+fx)}{m+4}-\frac{2\sec^2(e+fx)}{m+2}+\frac{1}{m}\right)(b\sec(e+fx))^m}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^m*Tan[e + f*x]^5,x]
```

```
[Out] ((b*Sec[e + f*x])^m*(m^(-1) - (2*Sec[e + f*x]^2)/(2 + m) + Sec[e + f*x]^4/(
4 + m)))/f
```

fricas [A] time = 0.58, size = 80, normalized size = 1.19

$$\frac{\left(\left(m^2+6\,m+8\right)\cos\left(fx+e\right)^4-2\left(m^2+4\,m\right)\cos\left(fx+e\right)^2+m^2+2\,m\right)\left(\frac{b}{\cos\left(fx+e\right)}\right)^m}{\left(fm^3+6\,fm^2+8\,fm\right)\cos\left(fx+e\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^5,x, algorithm="fricas")
```

```
[Out] ((m^2 + 6*m + 8)*cos(f*x + e)^4 - 2*(m^2 + 4*m)*cos(f*x + e)^2 + m^2 + 2*m)
*(b/cos(f*x + e))^m/((f*m^3 + 6*f*m^2 + 8*f*m)*cos(f*x + e)^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(fx+e\right)\right)^m\tan\left(fx+e\right)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^5,x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^m*tan(f*x + e)^5, x)
```

maple [C] time = 1.07, size = 6797, normalized size = 101.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^m*tan(f*x+e)^5,x)
```

```
[Out] result too large to display
```

maxima [A] time = 0.80, size = 77, normalized size = 1.15

$$\frac{\frac{b^m \cos\left(fx+e\right)^{-m}}{m} - \frac{2\, b^m \cos\left(fx+e\right)^{-m}}{(m+2)\cos\left(fx+e\right)^2} + \frac{b^m \cos\left(fx+e\right)^{-m}}{(m+4)\cos\left(fx+e\right)^4}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^5,x, algorithm="maxima")
```

```
[Out] (b^m*cos(f*x + e)^(-m)/m - 2*b^m*cos(f*x + e)^(-m)/((m + 2)*cos(f*x + e)^2)
 + b^m*cos(f*x + e)^(-m)/((m + 4)*cos(f*x + e)^4))/f
```

mupad [B] time = 7.81, size = 199, normalized size = 2.97

$$\frac{\left(\cos\left(4e+4fx\right) - \sin\left(4e+4fx\right)\,1\mathrm{i}\right)\left(\frac{b}{\cos\left(e+fx\right)}\right)^m \left(\frac{2\cos\left(4e+4fx\right)\left(\cos\left(4e+4fx\right)+\sin\left(4e+4fx\right)1\mathrm{i}\right)}{f\,m} + \frac{\left(\cos\left(4e+4fx\right)+\sin\left(4 \cdots\right.\right.}{f\,m\left(\cdots\right.}\right.}{16\left(\frac{\cos\left(2e+2fx\right)}{2}+\frac{1}{2}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^5*(b/cos(e + f*x))^m,x)
```

```
[Out] ((cos(4*e + 4*f*x) - sin(4*e + 4*f*x)*1i)*(b/cos(e + f*x))^m*((2*cos(4*e +
4*f*x)*(cos(4*e + 4*f*x) + sin(4*e + 4*f*x)*1i))/(f*m) + ((cos(4*e + 4*f*x)
 + sin(4*e + 4*f*x)*1i)*(4*m + 6*m^2 + 48))/(f*m*(6*m + m^2 + 8)) - (2*cos(
2*e + 2*f*x)*(cos(4*e + 4*f*x) + sin(4*e + 4*f*x)*1i)*(8*m + 4*m^2 - 32))/(
f*m*(6*m + m^2 + 8))))/(16*(cos(2*e + 2*f*x)/2 + 1/2)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\begin{cases} x\left(b\sec\left(e\right)\right)^{m}\tan^{5}\left(e\right) & \text{for } f=0 \\ \frac{\int\frac{\tan^{5}\left(e+fx\right)}{\sec^{4}\left(e+fx\right)}\,dx}{b^{4}} & \text{for } m=-4 \\ \frac{\int\frac{\tan^{5}\left(e+fx\right)}{\sec^{2}\left(e+fx\right)}\,dx}{b^{2}} & \text{for } m=-2 \\ \frac{\log\left(\tan^{2}\left(e+fx\right)+1\right)}{2f}+\frac{\tan^{4}\left(e+fx\right)}{4f}-\frac{\tan^{2}\left(e+fx\right)}{2f} & \text{for } m=0 \\ \frac{b^{m}m^{2}\tan^{4}\left(e+fx\right)\sec^{m}\left(e+fx\right)}{fm^{3}+6fm^{2}+8fm}+\frac{2b^{m}m\tan^{4}\left(e+fx\right)\sec^{m}\left(e+fx\right)}{fm^{3}+6fm^{2}+8fm}-\frac{4b^{m}m\tan^{2}\left(e+fx\right)\sec^{m}\left(e+fx\right)}{fm^{3}+6fm^{2}+8fm}+\frac{8b^{m}\sec^{m}\left(e+fx\right)}{fm^{3}+6fm^{2}+8fm} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**m*tan(f*x+e)**5,x)
```

```
[Out] Piecewise((x*(b*sec(e))**m*tan(e)**5, Eq(f, 0)), (Integral(tan(e + f*x)**5/
sec(e + f*x)**4, x)/b**4, Eq(m, -4)), (Integral(tan(e + f*x)**5/sec(e + f*x
)**2, x)/b**2, Eq(m, -2)), (log(tan(e + f*x)**2 + 1)/(2*f) + tan(e + f*x)**
4/(4*f) - tan(e + f*x)**2/(2*f), Eq(m, 0)), (b**m*m**2*tan(e + f*x)**4*sec(
e + f*x)**m/(f*m**3 + 6*f*m**2 + 8*f*m) + 2*b**m*m*tan(e + f*x)**4*sec(e +
f*x)**m/(f*m**3 + 6*f*m**2 + 8*f*m) - 4*b**m*m*tan(e + f*x)**2*sec(e + f*x)
**m/(f*m**3 + 6*f*m**2 + 8*f*m) + 8*b**m*sec(e + f*x)**m/(f*m**3 + 6*f*m**2
 + 8*f*m), True))
```

3.352 $\int (b\sec(e+fx))^m \tan^3(e+fx)\,dx$

Optimal. Leaf size=43

$$\frac{(b\sec(e+fx))^{m+2}}{b^2f(m+2)}-\frac{(b\sec(e+fx))^m}{fm}$$

```
[Out] -(b*sec(f*x+e))^m/f/m+(b*sec(f*x+e))^(2+m)/b^2/f/(2+m)
```

Rubi [A] time = 0.05, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2606, 14}

$$\frac{(b\sec(e+fx))^{m+2}}{b^2f(m+2)}-\frac{(b\sec(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^m*Tan[e + f*x]^3,x]
```

```
[Out] -((b*Sec[e + f*x])^m/(f*m)) + (b*Sec[e + f*x])^(2 + m)/(b^2*f*(2 + m))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\begin{aligned}\int (b\sec(e+fx))^m\tan^3(e+fx)\,dx &= \frac{b\,\text{Subst}\left(\int (bx)^{-1+m}\left(-1+x^2\right)\,dx,x,\sec(e+fx)\right)}{f}\\ &= \frac{b\,\text{Subst}\left(\int \left(-(bx)^{-1+m}+\frac{(bx)^{1+m}}{b^2}\right)dx,x,\sec(e+fx)\right)}{f}\\ &= -\frac{(b\sec(e+fx))^m}{fm}+\frac{(b\sec(e+fx))^{2+m}}{b^2f(2+m)}\end{aligned}$$

Mathematica [A] time = 0.12, size = 34, normalized size = 0.79

$$\frac{\left(\frac{\sec^2(e+fx)}{m+2}-\frac{1}{m}\right)(b\sec(e+fx))^m}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^m*Tan[e + f*x]^3,x]
```

```
[Out] ((b*Sec[e + f*x])^m*(-m^(-1) + Sec[e + f*x]^2/(2 + m)))/f
```

fricas [A] time = 0.62, size = 50, normalized size = 1.16

$$-\frac{\left((m+2)\cos\left(fx+e\right)^2-m\right)\left(\frac{b}{\cos\left(fx+e\right)}\right)^m}{\left(fm^2+2\,fm\right)\cos\left(fx+e\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^3,x, algorithm="fricas")
```

```
[Out] -((m + 2)*cos(f*x + e)^2 - m)*(b/cos(f*x + e))^m/((f*m^2 + 2*f*m)*cos(f*x +
 e)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(fx+e\right)\right)^m \tan\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^3,x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^m*tan(f*x + e)^3, x)
```

maple [C] time = 0.54, size = 2707, normalized size = 62.95

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^m*tan(f*x+e)^3,x)
```

```
[Out] -1/(2+m)/f/(exp(2*I*(f*x+e))+1)^2/m*(m/((exp(2*I*(f*x+e))+1)^m)*exp(I*(Re(f
*x)+Re(e)))^m*2^m*b^m*exp(-m*Im(f*x)-m*Im(e))*exp(-1/2*I*Pi*csgn(I*exp(I*(f
*x+e))/(exp(2*I*(f*x+e))+1))^3*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2
```

```
*I*(f*x+e))+1))^2*csgn(I*exp(I*(f*x+e)))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+
e))/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*m)*exp(-1/2*I*Pi*c
sgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*exp(I*(f*x+e)))*csgn(I/(e
xp(2*I*(f*x+e))+1))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))
+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*m)*exp(-1/2*I*Pi*csgn(
I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*
(f*x+e)))*csgn(I*b)*m)*exp(-1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f
*x+e)))^3*m)*exp(1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*c
sgn(I*b)*m)*exp(4*I*f*x)*exp(4*I*e)+2/((exp(2*I*(f*x+e))+1)^m)*exp(I*(Re(f*
x)+Re(e)))^m*2^m*b^m*exp(-m*Im(f*x)-m*Im(e))*exp(-1/2*I*Pi*csgn(I*exp(I*(f*
x+e))/(exp(2*I*(f*x+e))+1))^3*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*
I*(f*x+e))+1))^2*csgn(I*exp(I*(f*x+e)))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e
))/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*m)*exp(-1/2*I*Pi*cs
gn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*exp(I*(f*x+e)))*csgn(I/(ex
p(2*I*(f*x+e))+1))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+
1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*m)*exp(-1/2*I*Pi*csgn(I
*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(
f*x+e)))*csgn(I*b)*m)*exp(-1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*
x+e)))^3*m)*exp(1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*cs
gn(I*b)*m)*exp(4*I*f*x)*exp(4*I*e)-2*m/((exp(2*I*(f*x+e))+1)^m)*exp(I*(Re(f
*x)+Re(e)))^m*2^m*b^m*exp(-m*Im(f*x)-m*Im(e))*exp(-1/2*I*Pi*csgn(I*exp(I*(f
*x+e))/(exp(2*I*(f*x+e))+1))^3*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2
*I*(f*x+e))+1))^2*csgn(I*exp(I*(f*x+e)))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+
e))/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*m)*exp(-1/2*I*Pi*c
sgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*exp(I*(f*x+e)))*csgn(I/(e
xp(2*I*(f*x+e))+1))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))
+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*m)*exp(-1/2*I*Pi*csgn(
I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*
(f*x+e)))*csgn(I*b)*m)*exp(-1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f
*x+e)))^3*m)*exp(1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*c
sgn(I*b)*m)*exp(2*I*f*x)*exp(2*I*e)+4/((exp(2*I*(f*x+e))+1)^m)*exp(I*(Re(f*
x)+Re(e)))^m*2^m*b^m*exp(-m*Im(f*x)-m*Im(e))*exp(-1/2*I*Pi*csgn(I*exp(I*(f*
x+e))/(exp(2*I*(f*x+e))+1))^3*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*
I*(f*x+e))+1))^2*csgn(I*exp(I*(f*x+e)))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e
))/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))*m)*exp(-1/2*I*Pi*cs
gn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*exp(I*(f*x+e)))*csgn(I/(ex
p(2*I*(f*x+e))+1))*m)*exp(1/2*I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+
1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*m)*exp(-1/2*I*Pi*csgn(I
*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(
f*x+e)))*csgn(I*b)*m)*exp(-1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*
x+e)))^3*m)*exp(1/2*I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*cs
gn(I*b)*m)*exp(2*I*f*x)*exp(2*I*e)+m/((exp(2*I*(f*x+e))+1)^m)*exp(I*(Re(f*x
)+Re(e)))^m*2^m*b^m*exp(-1/2*m*(I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e)
)+1))^3-I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))^2*csgn(I*exp(I*(f*
x+e)))-I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(
```

```
f*x+e))+1))+I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*exp(I*(
f*x+e)))*csgn(I/(exp(2*I*(f*x+e))+1))-I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(
f*x+e))+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2+I*Pi*csgn(I*exp
(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+
e)))*csgn(I*b)+I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^3-I*Pi*cs
gn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))^2*csgn(I*b)+2*Im(e)+2*Im(f*x)))
+2/((exp(2*I*(f*x+e))+1)^m)*exp(I*(Re(f*x)+Re(e)))^m*2^m*b^m*exp(-1/2*m*(I*
Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))^3-I*Pi*csgn(I*exp(I*(f*x+e))
/(exp(2*I*(f*x+e))+1))^2*csgn(I*exp(I*(f*x+e)))-I*Pi*csgn(I*exp(I*(f*x+e))/
(exp(2*I*(f*x+e))+1))^2*csgn(I/(exp(2*I*(f*x+e))+1))+I*Pi*csgn(I*exp(I*(f*x
+e))/(exp(2*I*(f*x+e))+1))*csgn(I*exp(I*(f*x+e)))*csgn(I/(exp(2*I*(f*x+e))+
1))-I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*csgn(I*b/(exp(2*I*(f*x
+e))+1)*exp(I*(f*x+e)))^2+I*Pi*csgn(I*exp(I*(f*x+e))/(exp(2*I*(f*x+e))+1))*
csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*(f*x+e)))*csgn(I*b)+I*Pi*csgn(I*b/(exp(
2*I*(f*x+e))+1)*exp(I*(f*x+e)))^3-I*Pi*csgn(I*b/(exp(2*I*(f*x+e))+1)*exp(I*
(f*x+e)))^2*csgn(I*b)+2*Im(e)+2*Im(f*x))))
```

maxima [A] time = 0.89, size = 51, normalized size = 1.19

$$-\frac{\frac{b^m \cos\left(fx+e\right)^{-m}}{m} - \frac{b^m \cos\left(fx+e\right)^{-m}}{(m+2)\cos\left(fx+e\right)^2}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^3,x, algorithm="maxima")
```

```
[Out] -(b^m*cos(f*x + e)^(-m)/m - b^m*cos(f*x + e)^(-m)/((m + 2)*cos(f*x + e)^2))
/f
```

mupad [B] time = 3.39, size = 87, normalized size = 2.02

$$-\frac{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^m\,\left(8\,\cos\left(2\,e+2\,f\,x\right)-m+2\,\cos\left(4\,e+4\,f\,x\right)+m\,\cos\left(4\,e+4\,f\,x\right)+6\right)}{f\,m\,\left(m+2\right)\,\left(4\,\cos\left(2\,e+2\,f\,x\right)+\cos\left(4\,e+4\,f\,x\right)+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^3*(b/cos(e + f*x))^m,x)
```

```
[Out] -((b/cos(e + f*x))^m*(8*cos(2*e + 2*f*x) - m + 2*cos(4*e + 4*f*x) + m*cos(4
*e + 4*f*x) + 6))/(f*m*(m + 2)*(4*cos(2*e + 2*f*x) + cos(4*e + 4*f*x) + 3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\begin{cases} x\left(b\sec\left(e\right)\right)^{m}\tan^{3}\left(e\right) & \text{for } f=0 \\ \frac{\int\frac{\tan^{3}\left(e+fx\right)}{\sec^{2}\left(e+fx\right)}\,dx}{b^{2}} & \text{for } m=-2 \\ -\frac{\log\left(\tan^{2}\left(e+fx\right)+1\right)}{2f}+\frac{\tan^{2}\left(e+fx\right)}{2f} & \text{for } m=0 \\ \frac{b^{m}m\tan^{2}\left(e+fx\right)\sec^{m}\left(e+fx\right)}{fm^{2}+2fm}-\frac{2b^{m}\sec^{m}\left(e+fx\right)}{fm^{2}+2fm} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**m*tan(f*x+e)**3,x)
```

```
[Out] Piecewise((x*(b*sec(e))**m*tan(e)**3, Eq(f, 0)), (Integral(tan(e + f*x)**3/
sec(e + f*x)**2, x)/b**2, Eq(m, -2)), (-log(tan(e + f*x)**2 + 1)/(2*f) + ta
n(e + f*x)**2/(2*f), Eq(m, 0)), (b**m*m*tan(e + f*x)**2*sec(e + f*x)**m/(f*
m**2 + 2*f*m) - 2*b**m*sec(e + f*x)**m/(f*m**2 + 2*f*m), True))
```

3.353 $\int (b\sec(e+fx))^m \tan(e+fx)\,dx$

Optimal. Leaf size=17

$$\frac{(b\sec(e+fx))^m}{fm}$$

```
[Out] (b*sec(f*x+e))^m/f/m
```

Rubi [A] time = 0.02, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {2606, 32}

$$\frac{(b\sec(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^m*Tan[e + f*x],x]
```

```
[Out] (b*Sec[e + f*x])^m/(f*m)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 && !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\begin{aligned}\int (b\sec(e+fx))^m \tan(e+fx)\,dx &= \frac{b\,\text{Subst}\left(\int (bx)^{-1+m}\,dx, x, \sec(e+fx)\right)}{f}\\ &= \frac{(b\sec(e+fx))^m}{fm}\end{aligned}$$

Mathematica [A] time = 0.02, size = 17, normalized size = 1.00

$$\frac{(b\sec(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^m*Tan[e + f*x],x]
```

```
[Out] (b*Sec[e + f*x])^m/(f*m)
```

fricas [A] time = 0.62, size = 19, normalized size = 1.12

$$\frac{\left(\frac{b}{\cos\left(fx+e\right)}\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e),x, algorithm="fricas")
```

```
[Out] (b/cos(f*x + e))^m/(f*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sec\left(fx+e\right)\right)^{m} \tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^m*tan(f*x + e), x)
```

maple [A] time = 0.06, size = 18, normalized size = 1.06

$$\frac{\left(b \sec\left(fx+e\right)\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^m*tan(f*x+e),x)
```

```
[Out] (b*sec(f*x+e))^m/f/m
```

maxima [A] time = 0.44, size = 20, normalized size = 1.18

$$\frac{b^{m} \cos\left(fx+e\right)^{-m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e),x, algorithm="maxima")
```

```
[Out] b^m*cos(f*x + e)^(-m)/(f*m)
```

mupad [B] time = 0.12, size = 19, normalized size = 1.12

$$\frac{\left(\frac{b}{\cos(e+f\,x)}\right)^m}{f\,m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)*(b/cos(e + f*x))^m,x)
[Out] (b/cos(e + f*x))^m/(f*m)
```

sympy [A] time = 0.42, size = 44, normalized size = 2.59

$$\begin{cases} x\tan(e) & \text{for } f=0\wedge m=0 \\ x\,(b\sec(e))^m\tan(e) & \text{for } f=0 \\ \frac{\log\left(\tan^2(e+fx)+1\right)}{2f} & \text{for } m=0 \\ \frac{b^m\sec^m(e+fx)}{fm} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**m*tan(f*x+e),x)
[Out] Piecewise((x*tan(e), Eq(f, 0) & Eq(m, 0)), (x*(b*sec(e))**m*tan(e), Eq(f, 0
)), (log(tan(e + f*x)**2 + 1)/(2*f), Eq(m, 0)), (b**m*sec(e + f*x)**m/(f*m)
, True))
```

3.354 $\int \cot(e+fx)(b\sec(e+fx))^m\,dx$

Optimal. Leaf size=40

$$-\frac{(b\sec(e+fx))^m\,{}_2F_1\left(1,\frac{m}{2};\frac{m+2}{2};\sec^2(e+fx)\right)}{fm}$$

```
[Out] -hypergeom([1, 1/2*m],[1+1/2*m],sec(f*x+e)^2)*(b*sec(f*x+e))^m/f/m
```

Rubi [A] time = 0.04, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {2606, 364}

$$-\frac{(b\sec(e+fx))^m\,{}_2F_1\left(1,\frac{m}{2};\frac{m+2}{2};\sec^2(e+fx)\right)}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]*(b*Sec[e + f*x])^m,x]
```

```
[Out] -((Hypergeometric2F1[1, m/2, (2 + m)/2, Sec[e + f*x]^2]*(b*Sec[e + f*x])^m)
/(f*m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\int \cot(e+fx)(b\sec(e+fx))^m\,dx = \frac{b\,\text{Subst}\left(\int \frac{(bx)^{-1+m}}{-1+x^2}\,dx, x, \sec(e+fx)\right)}{f}$$
$$= -\frac{{}_2F_1\left(1,\frac{m}{2};\frac{2+m}{2};\sec^2(e+fx)\right)(b\sec(e+fx))^m}{fm}$$

Mathematica [B] time = 0.82, size = 124, normalized size = 3.10

$$\frac{b\sec^2\left(\frac{1}{2}(e+fx)\right)(b\sec(e+fx))^{m-1}\left((\cos(e+fx)+1)\,{}_2F_1(1,1-m;2-m;\cos(e+fx))-2^m\sec^2\left(\frac{1}{2}(e+fx)\right)^{-}\right.}{4f(m-1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]*(b*Sec[e + f*x])^m,x]
```

```
[Out] (b*Sec[(e + f*x)/2]^2*((1 + Cos[e + f*x])*Hypergeometric2F1[1, 1 - m, 2 - m
, Cos[e + f*x]] - (2^m*Hypergeometric2F1[1 - m, 1 - m, 2 - m, (Cos[e + f*x]
*Sec[(e + f*x)/2]^2)/2])/(Sec[(e + f*x)/2]^2)^m)*(b*Sec[e + f*x])^(-1 + m))
/(4*f*(-1 + m))
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^m\cot\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*sec(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^m*cot(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(fx+e\right)\right)^m\cot\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*sec(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e), x)
```

maple [F] time = 1.11, size = 0, normalized size = 0.00

$$\int \cot\left(fx+e\right)\left(b\sec\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)*(b*sec(f*x+e))^m,x)
```

```
[Out] int(cot(f*x+e)*(b*sec(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*sec(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cot\left(e+f\,x\right)\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^m \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)*(b/cos(e + f*x))^m,x)
```

```
[Out] int(cot(e + f*x)*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(e+fx\right)\right)^{m}\cot\left(e+fx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*sec(f*x+e))**m,x)
```

```
[Out] Integral((b*sec(e + f*x))**m*cot(e + f*x), x)
```

3.355 $\int \cot^3(e+fx)(b\sec(e+fx))^m\,dx$

Optimal. Leaf size=39

$$\frac{(b\sec(e+fx))^m\,{}_2F_1\left(2,\frac{m}{2};\frac{m+2}{2};\sec^2(e+fx)\right)}{fm}$$

```
[Out] hypergeom([2, 1/2*m],[1+1/2*m],sec(f*x+e)^2)*(b*sec(f*x+e))^m/f/m
```

Rubi [A] time = 0.04, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2606, 364}

$$\frac{(b\sec(e+fx))^m\,{}_2F_1\left(2,\frac{m}{2};\frac{m+2}{2};\sec^2(e+fx)\right)}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^3*(b*Sec[e + f*x])^m,x]
```

```
[Out] (Hypergeometric2F1[2, m/2, (2 + m)/2, Sec[e + f*x]^2]*(b*Sec[e + f*x])^m)/(
f*m)
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\int \cot^3(e+fx)(b\sec(e+fx))^m\,dx = \frac{b\,\text{Subst}\left(\int \frac{(bx)^{-1+m}}{(-1+x^2)^2}\,dx, x, \sec(e+fx)\right)}{f}$$
$$= \frac{{}_2F_1\left(2, \frac{m}{2}; \frac{2+m}{2}; \sec^2(e+fx)\right)(b\sec(e+fx))^m}{fm}$$

Mathematica [C] time = 12.23, size = 815, normalized size = 20.90

$$\frac{\cos(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)\left(2^m\,{}_2F_1\left(1-m,1-m;2-m;\frac{1}{2}\cos(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)\right)\sec^2\left(\frac{1}{2}(e+fx)\right)^{-m}-(}{4f(m-1)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[e + f*x]^3*(b*Sec[e + f*x])^m,x]
```

```
[Out] (Cos[e + f*x]*Sec[(e + f*x)/2]^2*(-((1 + Cos[e + f*x])*Hypergeometric2F1[1,
 1 - m, 2 - m, Cos[e + f*x]]) + (2^m*Hypergeometric2F1[1 - m, 1 - m, 2 - m,
 (Cos[e + f*x]*Sec[(e + f*x)/2]^2)/2])/(Sec[(e + f*x)/2]^2)^m)*(b*Sec[e + f
*x])^m)/(4*f*(-1 + m)) - (2*Cot[(e + f*x)/2]*Cot[e + f*x]*Csc[e + f*x]^2*(A
ppellF1[1, m, -m, 2, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)
/2]^4*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^m + Appel
lF1[1, m, -m, 2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/2]
^2)^m*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^m)*(b*Sec[e + f*x])^m)/(f*(2*Appell
F1[1, m, -m, 2, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^6
*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1 + m) + m*Ap
pellF1[2, m, 1 - m, 3, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*
x)/2]^8*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1 + m)
 + m*AppellF1[2, 1 + m, -m, 3, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot
[(e + f*x)/2]^8*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)
^(1 + m) - 2*AppellF1[1, m, -m, 2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]
*(Csc[(e + f*x)/2]^2)^(1 + m)*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^m - m*Appel
lF1[2, m, 1 - m, 3, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)
/2]^2)^m*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^(1 + m)*Sec[e + f*x] - m*AppellF
1[2, 1 + m, -m, 3, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/
2]^2)^m*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^(1 + m)*Sec[e + f*x]))
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^m\cot\left(fx+e\right)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(b*sec(f*x+e))^m,x, algorithm="fricas")
[Out] integral((b*sec(f*x + e))^m*cot(f*x + e)^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sec\left(fx+e\right)\right)^{m} \cot\left(fx+e\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(b*sec(f*x+e))^m,x, algorithm="giac")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^3, x)
```

maple [F] time = 0.76, size = 0, normalized size = 0.00

$$\int \left(\cot^{3}\left(fx+e\right)\right)\left(b \sec\left(fx+e\right)\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^3*(b*sec(f*x+e))^m,x)
[Out] int(cot(f*x+e)^3*(b*sec(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sec\left(fx+e\right)\right)^{m} \cot\left(fx+e\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(b*sec(f*x+e))^m,x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \cot\left(e+f\,x\right)^{3}\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^3*(b/cos(e + f*x))^m,x)
[Out] int(cot(e + f*x)^3*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(e+fx\right)\right)^{m}\cot^{3}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**3*(b*sec(f*x+e))**m,x)
```

```
[Out] Integral((b*sec(e + f*x))**m*cot(e + f*x)**3, x)
```

3.356 $\int \cot^5(e+fx)(b\sec(e+fx))^m\,dx$

Optimal. Leaf size=40

$$-\frac{(b\sec(e+fx))^m\,{}_2F_1\left(3,\frac{m}{2};\frac{m+2}{2};\sec^2(e+fx)\right)}{fm}$$

```
[Out] -hypergeom([3, 1/2*m],[1+1/2*m],sec(f*x+e)^2)*(b*sec(f*x+e))^m/f/m
```

Rubi [A] time = 0.04, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2606, 364}

$$-\frac{(b\sec(e+fx))^m\,{}_2F_1\left(3,\frac{m}{2};\frac{m+2}{2};\sec^2(e+fx)\right)}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^5*(b*Sec[e + f*x])^m,x]
```

```
[Out] -((Hypergeometric2F1[3, m/2, (2 + m)/2, Sec[e + f*x]^2]*(b*Sec[e + f*x])^m)
/(f*m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\int \cot^5(e+fx)(b\sec(e+fx))^m\,dx = \frac{b\,\mathrm{Subst}\left(\int \frac{(bx)^{-1+m}}{\left(-1+x^2\right)^3}\,dx, x, \sec(e+fx)\right)}{f}$$

$$= -\frac{{}_2F_1\left(3, \frac{m}{2}; \frac{2+m}{2}; \sec^2(e+fx)\right)(b\sec(e+fx))^m}{fm}$$

Mathematica [C] time = 21.63, size = 2138, normalized size = 53.45

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[e + f*x]^5*(b*Sec[e + f*x])^m,x]
```

```
[Out] (Cos[e + f*x]*Sec[(e + f*x)/2]^2*((1 + Cos[e + f*x])*Hypergeometric2F1[1, 1
 - m, 2 - m, Cos[e + f*x]] - (2^m*Hypergeometric2F1[1 - m, 1 - m, 2 - m, (C
os[e + f*x]*Sec[(e + f*x)/2]^2)/2])/(Sec[(e + f*x)/2]^2)^m)*(b*Sec[e + f*x]
)^m)/(4*f*(-1 + m)) + (3*Cot[(e + f*x)/2]*Cot[e + f*x]*Csc[e + f*x]^4*(4*Ap
pellF1[1, m, -m, 2, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/
2]^6*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^m + Appell
F1[2, m, -m, 3, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^8
*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^m + (AppellF1[
2, m, -m, 3, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 4*AppellF1[1, m, -m
, 2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^2)*(Csc[(e +
 f*x)/2]^2)^m*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^m)*(b*Sec[e + f*x])^m)/(2*f
*(-6*AppellF1[1, m, -m, 2, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e
+ f*x)/2]^8*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1
+ m) - 3*m*AppellF1[2, m, 1 - m, 3, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2
]*Cot[(e + f*x)/2]^10*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)
/2]^2)^(1 + m) - 3*AppellF1[2, m, -m, 3, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)
/2]^2]*Cot[(e + f*x)/2]^10*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e +
 f*x)/2]^2)^(1 + m) - 3*m*AppellF1[2, 1 + m, -m, 3, Cot[(e + f*x)/2]^2, -Co
t[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^10*(-(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^
m*(Sec[(e + f*x)/2]^2)^(1 + m) - m*AppellF1[3, m, 1 - m, 4, Cot[(e + f*x)/2
]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^12*(-(Cos[e + f*x]*Csc[(e + f*x)
/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1 + m) - m*AppellF1[3, 1 + m, -m, 4, Cot[(e
 + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^12*(-(Cos[e + f*x]*Csc[
(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1 + m) + 3*m*AppellF1[2, m, 1 - m,
 3, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/2]^2)^(1 + m)*(
Cos[e + f*x]*Sec[(e + f*x)/2]^2)^m + 3*AppellF1[2, m, -m, 3, Tan[(e + f*x)/
2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/2]^2)^(1 + m)*(Cos[e + f*x]*Sec[(
```

```
e + f*x)/2]^2)^m + 3*m*AppellF1[2, 1 + m, -m, 3, Tan[(e + f*x)/2]^2, -Tan[(
e + f*x)/2]^2]*(Csc[(e + f*x)/2]^2)^(1 + m)*(Cos[e + f*x]*Sec[(e + f*x)/2]^
2)^m + 6*AppellF1[1, m, -m, 2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cot
[(e + f*x)/2]^2*(Csc[(e + f*x)/2]^2)^(1 + m)*(Cos[e + f*x]*Sec[(e + f*x)/2]
^2)^m + m*AppellF1[3, m, 1 - m, 4, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]
*(Csc[(e + f*x)/2]^2)^m*Sec[(e + f*x)/2]^2*(Cos[e + f*x]*Sec[(e + f*x)/2]^2
)^m + m*AppellF1[3, 1 + m, -m, 4, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*
(Csc[(e + f*x)/2]^2)^m*Sec[(e + f*x)/2]^2*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)
^m)) + (4*Cot[(e + f*x)/2]*Cot[e + f*x]*Csc[e + f*x]^2*(AppellF1[1, m, -m,
2, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^4*(-(Cos[e + f
*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^m + AppellF1[1, m, -m, 2, T
an[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/2]^2)^m*(Cos[e + f*x
]*Sec[(e + f*x)/2]^2)^m)*(b*Sec[e + f*x])^m)/(f*(2*AppellF1[1, m, -m, 2, Co
t[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^6*(-(Cos[e + f*x]*C
sc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1 + m) + m*AppellF1[2, m, 1 - m
, 3, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^8*(-(Cos[e +
 f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1 + m) + m*AppellF1[2, 1
 + m, -m, 3, Cot[(e + f*x)/2]^2, -Cot[(e + f*x)/2]^2]*Cot[(e + f*x)/2]^8*(-
(Cos[e + f*x]*Csc[(e + f*x)/2]^2))^m*(Sec[(e + f*x)/2]^2)^(1 + m) - 2*Appel
lF1[1, m, -m, 2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/2]
^2)^(1 + m)*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^m - m*AppellF1[2, m, 1 - m, 3
, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/2]^2)^m*(Cos[e +
f*x]*Sec[(e + f*x)/2]^2)^(1 + m)*Sec[e + f*x] - m*AppellF1[2, 1 + m, -m, 3,
 Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Csc[(e + f*x)/2]^2)^m*(Cos[e + f
*x]*Sec[(e + f*x)/2]^2)^(1 + m)*Sec[e + f*x]))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5*(b*sec(f*x+e))^m,x, algorithm="fricas")
[Out] integral((b*sec(f*x + e))^m*cot(f*x + e)^5, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5*(b*sec(f*x+e))^m,x, algorithm="giac")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^5, x)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \left(\cot^5\left(fx+e\right)\right)\left(b\sec\left(fx+e\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^5*(b*sec(f*x+e))^m,x)
[Out] int(cot(f*x+e)^5*(b*sec(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(fx+e\right)\right)^m\cot\left(fx+e\right)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5*(b*sec(f*x+e))^m,x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^5, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cot\left(e+f\,x\right)^5\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^5*(b/cos(e + f*x))^m,x)
[Out] int(cot(e + f*x)^5*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(e+fx\right)\right)^m\cot^5\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**5*(b*sec(f*x+e))**m,x)
[Out] Integral((b*sec(e + f*x))**m*cot(e + f*x)**5, x)
```

3.357 $\int (b\sec(e+fx))^m \tan^4(e+fx)\,dx$

Optimal. Leaf size=63

$$\frac{\tan^5(e+fx)\cos^2(e+fx)^{\frac{m+5}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(\frac{5}{2},\frac{m+5}{2};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

```
[Out] 1/5*(cos(f*x+e)^2)^(5/2+1/2*m)*hypergeom([5/2, 5/2+1/2*m],[7/2],sin(f*x+e)^
2)*(b*sec(f*x+e))^m*tan(f*x+e)^5/f
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$\frac{\tan^5(e+fx)\cos^2(e+fx)^{\frac{m+5}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(\frac{5}{2},\frac{m+5}{2};\frac{7}{2};\sin^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^m*Tan[e + f*x]^4,x]
```

```
[Out] ((Cos[e + f*x]^2)^((5 + m)/2)*Hypergeometric2F1[5/2, (5 + m)/2, 7/2, Sin[e
+ f*x]^2]*(b*Sec[e + f*x])^m*Tan[e + f*x]^5)/(5*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (b\sec(e+fx))^m\tan^4(e+fx)\,dx = \frac{\cos^2(e+fx)^{\frac{5+m}{2}}\,{}_2F_1\left(\frac{5}{2},\frac{5+m}{2};\frac{7}{2};\sin^2(e+fx)\right)(b\sec(e+fx))^m\tan^5(e+fx}{5f}$$

Mathematica [A] time = 0.26, size = 110, normalized size = 1.75

$$\frac{\sin(2(e+fx))\cos^2(e+fx)^{\frac{m-1}{2}}(b\sec(e+fx))^m\left({}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{3}{2};\sin^2(e+fx)\right)-2\,{}_2F_1\left(\frac{1}{2},\frac{m+3}{2};\frac{3}{2};\sin^2(e+fx)\right)+\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Sec[e + f*x])^m*Tan[e + f*x]^4,x]
```

```
[Out] ((Cos[e + f*x]^2)^((-1 + m)/2)*(Hypergeometric2F1[1/2, (1 + m)/2, 3/2, Sin[
e + f*x]^2] - 2*Hypergeometric2F1[1/2, (3 + m)/2, 3/2, Sin[e + f*x]^2] + Hy
pergeometric2F1[1/2, (5 + m)/2, 3/2, Sin[e + f*x]^2])*(b*Sec[e + f*x])^m*Si
n[2*(e + f*x)])/(2*f)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^m*tan(f*x + e)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^m*tan(f*x + e)^4, x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^m*tan(f*x+e)^4,x)
```

```
[Out] int((b*sec(f*x+e))^m*tan(f*x+e)^4,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^m*tan(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(b/cos(e + f*x))^m,x)
[Out] int(tan(e + f*x)^4*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sec{\left(e + f x \right)}\right)^{m} \tan^{4}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**m*tan(f*x+e)**4,x)
[Out] Integral((b*sec(e + f*x))**m*tan(e + f*x)**4, x)
```

3.358 $\int (b\sec(e+fx))^m \tan^2(e+fx)\,dx$

Optimal. Leaf size=63

$$\frac{\tan^3(e+fx)\cos^2(e+fx)^{\frac{m+3}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(\frac{3}{2},\frac{m+3}{2};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

```
[Out] 1/3*(cos(f*x+e)^2)^(3/2+1/2*m)*hypergeom([3/2, 3/2+1/2*m],[5/2],sin(f*x+e)^
2)*(b*sec(f*x+e))^m*tan(f*x+e)^3/f
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$\frac{\tan^3(e+fx)\cos^2(e+fx)^{\frac{m+3}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(\frac{3}{2},\frac{m+3}{2};\frac{5}{2};\sin^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Sec[e + f*x])^m*Tan[e + f*x]^2,x]
```

```
[Out] ((Cos[e + f*x]^2)^((3 + m)/2)*Hypergeometric2F1[3/2, (3 + m)/2, 5/2, Sin[e
+ f*x]^2]*(b*Sec[e + f*x])^m*Tan[e + f*x]^3)/(3*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (b\sec(e+fx))^m\tan^2(e+fx)\,dx=\frac{\cos^2(e+fx)^{\frac{3+m}{2}}\,{}_2F_1\left(\frac{3}{2},\frac{3+m}{2};\frac{5}{2};\sin^2(e+fx)\right)(b\sec(e+fx))^m\tan^3(e+fx)}{3f}$$

Mathematica [C] time = 25.16, size = 6612, normalized size = 104.95

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(b*Sec[e + f*x])^m*Tan[e + f*x]^2,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^m*tan(f*x + e)^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e))^m*tan(f*x + e)^2, x)
```

maple [F] time = 0.56, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\left(\tan^{2}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sec(f*x+e))^m*tan(f*x+e)^2,x)
```

```
[Out] int((b*sec(f*x+e))^m*tan(f*x+e)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))^m*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e))^m*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(b/cos(e + f*x))^m,x)
[Out] int(tan(e + f*x)^2*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sec \left(e + f x\right)\right)^{m} \tan^{2}\left(e + f x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*sec(f*x+e))**m*tan(f*x+e)**2,x)
[Out] Integral((b*sec(e + f*x))**m*tan(e + f*x)**2, x)
```

3.359 $\int \cot^2(e+fx)(b\sec(e+fx))^m\,dx$

Optimal. Leaf size=59

$$-\frac{\cot(e+fx)\cos^2(e+fx)^{\frac{m-1}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(-\frac{1}{2},\frac{m-1}{2};\frac{1}{2};\sin^2(e+fx)\right)}{f}$$

```
[Out] -(cos(f*x+e)^2)^(-1/2+1/2*m)*cot(f*x+e)*hypergeom([-1/2, -1/2+1/2*m],[1/2],
sin(f*x+e)^2)*(b*sec(f*x+e))^m/f
```

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$-\frac{\cot(e+fx)\cos^2(e+fx)^{\frac{m-1}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(-\frac{1}{2},\frac{m-1}{2};\frac{1}{2};\sin^2(e+fx)\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^2*(b*Sec[e + f*x])^m,x]
```

```
[Out] -(((Cos[e + f*x]^2)^((-1 + m)/2)*Cot[e + f*x]*Hypergeometric2F1[-1/2, (-1 +
 m)/2, 1/2, Sin[e + f*x]^2]*(b*Sec[e + f*x])^m)/f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \cot^2(e+fx)(b\sec(e+fx))^m\,dx = -\frac{\cos^2(e+fx)^{\frac{1}{2}(-1+m)}\cot(e+fx)\,{}_2F_1\left(-\frac{1}{2},\frac{1}{2}(-1+m);\frac{1}{2};\sin^2(e+fx)\right)(b\,\mathrm{s}}{f}$$

Mathematica [C] time = 21.39, size = 4872, normalized size = 82.58

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[e + f*x]^2*(b*Sec[e + f*x])^m,x]
```

```
[Out] (Cot[(e + f*x)/2]*Cot[e + f*x]^2*(b*Sec[e + f*x])^m*(Cos[(e + f*x)/2]^2*Sec
[e + f*x])^m*(-(AppellF1[-1/2, m, -m, 1/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*
x)/2]^2]*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^m) + 3*(Sec[(e + f*x)/2]^2)^m*Ta
n[(e + f*x)/2]^2*((-4*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan
[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2)/(3*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e
 + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + m)*AppellF1[3/2, m, 2 - m, 5/
2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + m*AppellF1[3/2, 1 + m, 1 - m,
 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2) + Appel
lF1[1/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]/(3*AppellF1[1
/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*m*(AppellF1[3/
2, m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + AppellF1[3/2,
1 + m, -m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^
2))))/(2*f*(-1/4*(Csc[(e + f*x)/2]^2*(Cos[(e + f*x)/2]^2*Sec[e + f*x])^m*(-
(AppellF1[-1/2, m, -m, 1/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Cos[e
 + f*x]*Sec[(e + f*x)/2]^2)^m) + 3*(Sec[(e + f*x)/2]^2)^m*Tan[(e + f*x)/2]^
2*((-4*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2
]*Cos[(e + f*x)/2]^2)/(3*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2] + 2*((-1 + m)*AppellF1[3/2, m, 2 - m, 5/2, Tan[(e + f*x
)/2]^2, -Tan[(e + f*x)/2]^2] + m*AppellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e +
f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2) + AppellF1[1/2, m, -m,
 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]/(3*AppellF1[1/2, m, -m, 3/2,
 Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*m*(AppellF1[3/2, m, 1 - m, 5/
2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + AppellF1[3/2, 1 + m, -m, 5/2,
 Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2)))) + (Cot[(e
 + f*x)/2]*(Cos[(e + f*x)/2]^2*Sec[e + f*x])^m*(-((Cos[e + f*x]*Sec[(e + f*
x)/2]^2)^m*(-(m*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e +
f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2]) - m*AppellF1[1/2, 1 + m, -m
, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e +
 f*x)/2])) - m*AppellF1[-1/2, m, -m, 1/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x
)/2]^2]*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^(-1 + m)*(-(Sec[(e + f*x)/2]^2*Si
n[e + f*x]) + Cos[e + f*x]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2]) + 3*(Sec[(e
 + f*x)/2]^2)^(1 + m)*Tan[(e + f*x)/2]*((-4*AppellF1[1/2, m, 1 - m, 3/2, Ta
n[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2)/(3*AppellF1[1/2,
 m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + m)*Appe
llF1[3/2, m, 2 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + m*Appel
lF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(
e + f*x)/2]^2) + AppellF1[1/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*
x)/2]^2]/(3*AppellF1[1/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]
^2] + 2*m*(AppellF1[3/2, m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/
2]^2] + AppellF1[3/2, 1 + m, -m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]
^2])*Tan[(e + f*x)/2]^2)) + 3*m*(Sec[(e + f*x)/2]^2)^m*Tan[(e + f*x)/2]^3*(
```

```
(-4*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*C
os[(e + f*x)/2]^2)/(3*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan
[(e + f*x)/2]^2] + 2*((-1 + m)*AppellF1[3/2, m, 2 - m, 5/2, Tan[(e + f*x)/2
]^2, -Tan[(e + f*x)/2]^2] + m*AppellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x
)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2) + AppellF1[1/2, m, -m, 3/
2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]/(3*AppellF1[1/2, m, -m, 3/2, Ta
n[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*m*(AppellF1[3/2, m, 1 - m, 5/2,
Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + AppellF1[3/2, 1 + m, -m, 5/2, Ta
n[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2)) + 3*(Sec[(e +
f*x)/2]^2)^m*Tan[(e + f*x)/2]^2*((4*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f
*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[(e + f*x)/2]*Sin[(e + f*x)/2])/(3*Appell
F1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 +
m)*AppellF1[3/2, m, 2 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] +
m*AppellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]
)*Tan[(e + f*x)/2]^2) - (4*Cos[(e + f*x)/2]^2*(-1/3*((1 - m)*AppellF1[3/2,
m, 2 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*
Tan[(e + f*x)/2]) + (m*AppellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x)/2]^2,
 -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/3))/(3*AppellF1[
1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + m)*
AppellF1[3/2, m, 2 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + m*A
ppellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*T
an[(e + f*x)/2]^2) + ((m*AppellF1[3/2, m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/3 + (m*AppellF1[3/
2, 1 + m, -m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2
]^2*Tan[(e + f*x)/2])/3)/(3*AppellF1[1/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2] + 2*m*(AppellF1[3/2, m, 1 - m, 5/2, Tan[(e + f*x)/2]^2,
 -Tan[(e + f*x)/2]^2] + AppellF1[3/2, 1 + m, -m, 5/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2) - (AppellF1[1/2, m, -m, 3/2, Tan[(
e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(2*m*(AppellF1[3/2, m, 1 - m, 5/2, Tan[
(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + AppellF1[3/2, 1 + m, -m, 5/2, Tan[(e
 + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2] + 3
*((m*AppellF1[3/2, m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*
Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/3 + (m*AppellF1[3/2, 1 + m, -m, 5/2, T
an[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2]
)/3) + 2*m*Tan[(e + f*x)/2]^2*((-3*(1 - m)*AppellF1[5/2, m, 2 - m, 7/2, Tan
[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/
5 + (6*m*AppellF1[5/2, 1 + m, 1 - m, 7/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x
)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/5 + (3*(1 + m)*AppellF1[5/2, 2
 + m, -m, 7/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*
Tan[(e + f*x)/2])/5)))/(3*AppellF1[1/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -Ta
n[(e + f*x)/2]^2] + 2*m*(AppellF1[3/2, m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2] + AppellF1[3/2, 1 + m, -m, 5/2, Tan[(e + f*x)/2]^2, -Ta
n[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2)^2 + (4*AppellF1[1/2, m, 1 - m, 3/2,
Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2*(2*((-1 + m)*Ap
pellF1[3/2, m, 2 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + m*App
```

```
ellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Sec
[(e + f*x)/2]^2*Tan[(e + f*x)/2] + 3*(-1/3*((1 - m)*AppellF1[3/2, m, 2 - m,
 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e +
f*x)/2]) + (m*AppellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e
+ f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/3) + 2*Tan[(e + f*x)/2]^2
*((-1 + m)*((-3*(2 - m)*AppellF1[5/2, m, 3 - m, 7/2, Tan[(e + f*x)/2]^2, -T
an[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/5 + (3*m*AppellF1[5
/2, 1 + m, 2 - m, 7/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*
x)/2]^2*Tan[(e + f*x)/2])/5) + m*((-3*(1 - m)*AppellF1[5/2, 1 + m, 2 - m, 7
/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*
x)/2])/5 + (3*(1 + m)*AppellF1[5/2, 2 + m, 1 - m, 7/2, Tan[(e + f*x)/2]^2,
-Tan[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2])/5))))/(3*AppellF1
[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + m)
*AppellF1[3/2, m, 2 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + m*
AppellF1[3/2, 1 + m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*
Tan[(e + f*x)/2]^2)^2)))/2 + (m*Cot[(e + f*x)/2]*(Cos[(e + f*x)/2]^2*Sec[e
+ f*x])^(-1 + m)*(-(AppellF1[-1/2, m, -m, 1/2, Tan[(e + f*x)/2]^2, -Tan[(e
+ f*x)/2]^2]*(Cos[e + f*x]*Sec[(e + f*x)/2]^2)^m) + 3*(Sec[(e + f*x)/2]^2)^
m*Tan[(e + f*x)/2]^2*((-4*AppellF1[1/2, m, 1 - m, 3/2, Tan[(e + f*x)/2]^2,
-Tan[(e + f*x)/2]^2]*Cos[(e + f*x)/2]^2)/(3*AppellF1[1/2, m, 1 - m, 3/2, Ta
n[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + m)*AppellF1[3/2, m, 2 - m
, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + m*AppellF1[3/2, 1 + m, 1
- m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2) + A
ppellF1[1/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]/(3*Appell
F1[1/2, m, -m, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*m*(AppellF
1[3/2, m, 1 - m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + AppellF1[3
/2, 1 + m, -m, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)
/2]^2)))*(-(Cos[(e + f*x)/2]*Sec[e + f*x]*Sin[(e + f*x)/2]) + Cos[(e + f*x)
/2]^2*Sec[e + f*x]*Tan[e + f*x]))/2))
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(b*sec(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e))^m*cot(f*x + e)^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(b*sec(f*x+e))^m,x, algorithm="giac")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^2, x)
```

maple [F] time = 0.61, size = 0, normalized size = 0.00

$$\int \left(\cot^2\left(fx+e\right)\right)\left(b\sec\left(fx+e\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^2*(b*sec(f*x+e))^m,x)
[Out] int(cot(f*x+e)^2*(b*sec(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(fx+e\right)\right)^m\cot\left(fx+e\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(b*sec(f*x+e))^m,x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cot\left(e+f\,x\right)^2\left(\frac{b}{\cos\left(e+f\,x\right)}\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^2*(b/cos(e + f*x))^m,x)
[Out] int(cot(e + f*x)^2*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(e+fx\right)\right)^m\cot^2\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**2*(b*sec(f*x+e))**m,x)
[Out] Integral((b*sec(e + f*x))**m*cot(e + f*x)**2, x)
```

3.360 $\int \cot^4(e+fx)(b\sec(e+fx))^m\,dx$

Optimal. Leaf size=63

$$-\frac{\cot^3(e+fx)\cos^2(e+fx)^{\frac{m-3}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(-\frac{3}{2},\frac{m-3}{2};-\frac{1}{2};\sin^2(e+fx)\right)}{3f}$$

```
[Out] -1/3*(cos(f*x+e)^2)^(-3/2+1/2*m)*cot(f*x+e)^3*hypergeom([-3/2, -3/2+1/2*m],
[-1/2],sin(f*x+e)^2)*(b*sec(f*x+e))^m/f
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$-\frac{\cot^3(e+fx)\cos^2(e+fx)^{\frac{m-3}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(-\frac{3}{2},\frac{m-3}{2};-\frac{1}{2};\sin^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^4*(b*Sec[e + f*x])^m,x]
```

```
[Out] -((Cos[e + f*x]^2)^((-3 + m)/2)*Cot[e + f*x]^3*Hypergeometric2F1[-3/2, (-3
+ m)/2, -1/2, Sin[e + f*x]^2]*(b*Sec[e + f*x])^m)/(3*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \cot^4(e+fx)(b\sec(e+fx))^m\,dx=-\frac{\cos^2(e+fx)^{\frac{1}{2}(-3+m)}\cot^3(e+fx)\,{}_2F_1\left(-\frac{3}{2},\frac{1}{2}(-3+m);-\frac{1}{2};\sin^2(e+fx)\right)(b}{3f}$$

Mathematica [C] time = 26.01, size = 6532, normalized size = 103.68

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cot[e + f*x]^4*(b*Sec[e + f*x])^m,x]
[Out] Result too large to show
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(b*sec(f*x+e))^m,x, algorithm="fricas")
[Out] integral((b*sec(f*x + e))^m*cot(f*x + e)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(b*sec(f*x+e))^m,x, algorithm="giac")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^4, x)
```

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int\left(\cot^{4}\left(fx+e\right)\right)\left(b\sec\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^4*(b*sec(f*x+e))^m,x)
[Out] int(cot(f*x+e)^4*(b*sec(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(b*sec(f*x+e))^m,x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cot\left(e+f\,x\right)^4\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^4*(b/cos(e + f*x))^m,x)
[Out] int(cot(e + f*x)^4*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sec{\left(e + f x \right)}\right)^{m} \cot^{4}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**4*(b*sec(f*x+e))**m,x)
[Out] Integral((b*sec(e + f*x))**m*cot(e + f*x)**4, x)
```

3.361 $\int \cot^6(e+fx)(b\sec(e+fx))^m\,dx$

Optimal. Leaf size=63

$$-\frac{\cot^5(e+fx)\cos^2(e+fx)^{\frac{m-5}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(-\frac{5}{2},\frac{m-5}{2};-\frac{3}{2};\sin^2(e+fx)\right)}{5f}$$

```
[Out] -1/5*(cos(f*x+e)^2)^(-5/2+1/2*m)*cot(f*x+e)^5*hypergeom([-5/2, -5/2+1/2*m],
[-3/2],sin(f*x+e)^2)*(b*sec(f*x+e))^m/f
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$-\frac{\cot^5(e+fx)\cos^2(e+fx)^{\frac{m-5}{2}}(b\sec(e+fx))^m\,{}_2F_1\left(-\frac{5}{2},\frac{m-5}{2};-\frac{3}{2};\sin^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^6*(b*Sec[e + f*x])^m,x]
```

```
[Out] -((Cos[e + f*x]^2)^((-5 + m)/2)*Cot[e + f*x]^5*Hypergeometric2F1[-5/2, (-5
+ m)/2, -3/2, Sin[e + f*x]^2]*(b*Sec[e + f*x])^m)/(5*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \cot^6(e+fx)(b\sec(e+fx))^m\,dx = -\frac{\cos^2(e+fx)^{\frac{1}{2}(-5+m)}\cot^5(e+fx)\,{}_2F_1\left(-\frac{5}{2},\frac{1}{2}(-5+m);-\frac{3}{2};\sin^2(e+fx)\right)(}{5f}$$

Mathematica [F] time = 0.60, size = 0, normalized size = 0.00

$$\int \cot^6(e+fx)(b\sec(e+fx))^m\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cot[e + f*x]^6*(b*Sec[e + f*x])^m,x]
[Out] Integrate[Cot[e + f*x]^6*(b*Sec[e + f*x])^m, x]
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{6},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^6*(b*sec(f*x+e))^m,x, algorithm="fricas")
[Out] integral((b*sec(f*x + e))^m*cot(f*x + e)^6, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^6*(b*sec(f*x+e))^m,x, algorithm="giac")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^6, x)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int\left(\cot^{6}\left(fx+e\right)\right)\left(b\sec\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^6*(b*sec(f*x+e))^m,x)
[Out] int(cot(f*x+e)^6*(b*sec(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sec\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^6*(b*sec(f*x+e))^m,x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e))^m*cot(f*x + e)^6, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cot\left(e+f\,x\right)^6\,{\left(\frac{b}{\cos\left(e+f\,x\right)}\right)}^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^6*(b/cos(e + f*x))^m,x)
```

```
[Out] int(cot(e + f*x)^6*(b/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sec\left(e+fx\right)\right)^{m}\cot^{6}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**6*(b*sec(f*x+e))**m,x)
```

```
[Out] Integral((b*sec(e + f*x))**m*cot(e + f*x)**6, x)
```

3.362 $\int (a\sec(e+fx))^m(b\tan(e+fx))^n\,dx$

Optimal. Leaf size=82

$$\frac{(a\sec(e+fx))^m(b\tan(e+fx))^{n+1}\cos^2(e+fx)^{\frac{1}{2}(m+n+1)}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(m+n+1);\frac{n+3}{2};\sin^2(e+fx)\right)}{bf(n+1)}$$

```
[Out] (cos(f*x+e)^2)^(1/2+1/2*m+1/2*n)*hypergeom([1/2+1/2*n, 1/2+1/2*m+1/2*n],[3/
2+1/2*n],sin(f*x+e)^2)*(a*sec(f*x+e))^m*(b*tan(f*x+e))^(1+n)/b/f/(1+n)
```

Rubi [A] time = 0.05, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2617}

$$\frac{(a\sec(e+fx))^m(b\tan(e+fx))^{n+1}\cos^2(e+fx)^{\frac{1}{2}(m+n+1)}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(m+n+1);\frac{n+3}{2};\sin^2(e+fx)\right)}{bf(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((Cos[e + f*x]^2)^((1 + m + n)/2)*Hypergeometric2F1[(1 + n)/2, (1 + m + n)/
2, (3 + n)/2, Sin[e + f*x]^2]*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(1 + n))/
(b*f*(1 + n))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (a\sec(e+fx))^m(b\tan(e+fx))^n\,dx = \frac{\cos^2(e+fx)^{\frac{1}{2}(1+m+n)}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{2}(1+m+n);\frac{3+n}{2};\sin^2(e+fx)\right)(a\sec(e$$

$$bf(1+n)$$

Mathematica [A] time = 0.13, size = 80, normalized size = 0.98

$$\frac{b\left(-\tan^2(e+fx)\right)^{\frac{1-n}{2}}(a\sec(e+fx))^m(b\tan(e+fx))^{n-1}\,{}_2F_1\left(\frac{m}{2},\frac{1-n}{2};\frac{m+2}{2};\sec^2(e+fx)\right)}{fm}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] (b*Hypergeometric2F1[m/2, (1 - n)/2, (2 + m)/2, Sec[e + f*x]^2]*(a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(-1 + n)*(-Tan[e + f*x]^2)^((1 - n)/2))/(f*m)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sec\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sec(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((a*sec(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(a\sec\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sec(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="giac")
```

```
[Out] integrate((a*sec(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

maple [F] time = 1.46, size = 0, normalized size = 0.00

$$\int\left(a\sec\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*sec(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

```
[Out] int((a*sec(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(a\sec\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sec(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((a*sec(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(b\tan\left(e+f\,x\right)\right)^n\,{\left(\frac{a}{\cos\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n*(a/cos(e + f*x))^m,x)
[Out] int((b*tan(e + f*x))^n*(a/cos(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a\sec\left(e+fx\right)\right)^{m}\left(b\tan\left(e+fx\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*sec(f*x+e))**m*(b*tan(f*x+e))**n,x)
[Out] Integral((a*sec(e + f*x))**m*(b*tan(e + f*x))**n, x)
```

3.363 $\int \sec^6(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=74

$$\frac{(d\tan(a+bx))^{n+5}}{bd^5(n+5)}+\frac{2(d\tan(a+bx))^{n+3}}{bd^3(n+3)}+\frac{(d\tan(a+bx))^{n+1}}{bd(n+1)}$$

```
[Out] (d*tan(b*x+a))^(1+n)/b/d/(1+n)+2*(d*tan(b*x+a))^(3+n)/b/d^3/(3+n)+(d*tan(b*
x+a))^(5+n)/b/d^5/(5+n)
```

Rubi [A] time = 0.07, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2607, 270}

$$\frac{2(d\tan(a+bx))^{n+3}}{bd^3(n+3)}+\frac{(d\tan(a+bx))^{n+5}}{bd^5(n+5)}+\frac{(d\tan(a+bx))^{n+1}}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^6*(d*Tan[a + b*x])^n,x]
```

```
[Out] (d*Tan[a + b*x])^(1 + n)/(b*d*(1 + n)) + (2*(d*Tan[a + b*x])^(3 + n))/(b*d^
3*(3 + n)) + (d*Tan[a + b*x])^(5 + n)/(b*d^5*(5 + n))
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \sec^6(a+bx)(d\tan(a+bx))^n\,dx = \frac{\text{Subst}\left(\int (dx)^n\left(1+x^2\right)^2\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left((dx)^n + \frac{2(dx)^{2+n}}{d^2} + \frac{(dx)^{4+n}}{d^4}\right)dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{(d\tan(a+bx))^{1+n}}{bd(1+n)} + \frac{2(d\tan(a+bx))^{3+n}}{bd^3(3+n)} + \frac{(d\tan(a+bx))^{5+n}}{bd^5(5+n)}$$

Mathematica [A] time = 2.10, size = 101, normalized size = 1.36

$$\frac{d(d\tan(a+bx))^{n-1}\left(\tan^2(a+bx)\sec^4(a+bx)\left(2(n+3)\cos(2(a+bx))+\cos(4(a+bx))+n^2+6n+8\right)+8\left(-\text{ta}\right.\right.}{b(n+1)(n+3)(n+5)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^6*(d*Tan[a + b*x])^n,x]
```

```
[Out] (d*(d*Tan[a + b*x])^(-1 + n)*((8 + 6*n + n^2 + 2*(3 + n)*Cos[2*(a + b*x)] +
 Cos[4*(a + b*x)])*Sec[a + b*x]^4*Tan[a + b*x]^2 + 8*(-Tan[a + b*x]^2)^((1
- n)/2)))/(b*(1 + n)*(3 + n)*(5 + n))
```

fricas [A] time = 0.56, size = 85, normalized size = 1.15

$$\frac{\left(8\cos(bx+a)^4 + 4(n+1)\cos(bx+a)^2 + n^2 + 4n + 3\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^n\sin(bx+a)}{\left(bn^3 + 9bn^2 + 23bn + 15b\right)\cos(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] (8*cos(b*x + a)^4 + 4*(n + 1)*cos(b*x + a)^2 + n^2 + 4*n + 3)*(d*sin(b*x +
a)/cos(b*x + a))^n*sin(b*x + a)/((b*n^3 + 9*b*n^2 + 23*b*n + 15*b)*cos(b*x
+ a)^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\sec(bx+a)^6\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6*(d*tan(b*x+a))^n,x, algorithm="giac")
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a)^6, x)
```

maple [F] time = 0.63, size = 0, normalized size = 0.00

$$\int \left(\sec^{6}\left(bx+a\right)\right)\left(d\tan\left(bx+a\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^6*(d*tan(b*x+a))^n,x)
[Out] int(sec(b*x+a)^6*(d*tan(b*x+a))^n,x)
```

maxima [A] time = 0.95, size = 77, normalized size = 1.04

$$\frac{\frac{d^{n}\tan(bx+a)^{n}\tan(bx+a)^{5}}{n+5}+\frac{2\,d^{n}\tan(bx+a)^{n}\tan(bx+a)^{3}}{n+3}+\frac{(d\tan(bx+a))^{n+1}}{d(n+1)}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^6*(d*tan(b*x+a))^n,x, algorithm="maxima")
[Out] (d^n*tan(b*x + a)^n*tan(b*x + a)^5/(n + 5) + 2*d^n*tan(b*x + a)^n*tan(b*x +
 a)^3/(n + 3) + (d*tan(b*x + a))^(n + 1)/(d*(n + 1)))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(d\,\tan\left(a+b\,x\right)\right)}^n}{{\cos\left(a+b\,x\right)}^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^n/cos(a + b*x)^6,x)
[Out] int((d*tan(a + b*x))^n/cos(a + b*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\tan\left(a+bx\right)\right)^{n}\sec^{6}\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**6*(d*tan(b*x+a))**n,x)
[Out] Integral((d*tan(a + b*x))**n*sec(a + b*x)**6, x)
```

3.364 $\int \sec^4(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=49

$$\frac{(d\tan(a+bx))^{n+3}}{bd^3(n+3)}+\frac{(d\tan(a+bx))^{n+1}}{bd(n+1)}$$

```
[Out] (d*tan(b*x+a))^(1+n)/b/d/(1+n)+(d*tan(b*x+a))^(3+n)/b/d^3/(3+n)
```

Rubi [A] time = 0.05, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2607, 14}

$$\frac{(d\tan(a+bx))^{n+3}}{bd^3(n+3)}+\frac{(d\tan(a+bx))^{n+1}}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^4*(d*Tan[a + b*x])^n,x]
```

```
[Out] (d*Tan[a + b*x])^(1 + n)/(b*d*(1 + n)) + (d*Tan[a + b*x])^(3 + n)/(b*d^3*(3
 + n))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \sec^4(a+bx)(d\tan(a+bx))^n\,dx = \frac{\text{Subst}\left(\int (dx)^n\left(1+x^2\right)\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \left((dx)^n + \frac{(dx)^{2+n}}{d^2}\right)\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{(d\tan(a+bx))^{1+n}}{bd(1+n)} + \frac{(d\tan(a+bx))^{3+n}}{bd^3(3+n)}$$

Mathematica [A] time = 1.15, size = 78, normalized size = 1.59

$$\frac{d(d\tan(a+bx))^{n-1}\left(2\left(-\tan^2(a+bx)\right)^{\frac{1-n}{2}} + \tan^2(a+bx)\sec^2(a+bx)(\cos(2(a+bx))+n+2)\right)}{b(n+1)(n+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^4*(d*Tan[a + b*x])^n,x]
```

```
[Out] (d*(d*Tan[a + b*x])^(-1 + n)*((2 + n + Cos[2*(a + b*x)])*Sec[a + b*x]^2*Tan
[a + b*x]^2 + 2*(-Tan[a + b*x]^2)^((1 - n)/2)))/(b*(1 + n)*(3 + n))
```

fricas [A] time = 0.53, size = 61, normalized size = 1.24

$$\frac{\left(2\cos\left(bx+a\right)^2+n+1\right)\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^n\sin\left(bx+a\right)}{\left(bn^2+4\,bn+3\,b\right)\cos\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] (2*cos(b*x + a)^2 + n + 1)*(d*sin(b*x + a)/cos(b*x + a))^n*sin(b*x + a)/((b
*n^2 + 4*b*n + 3*b)*cos(b*x + a)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\tan\left(bx+a\right)\right)^n\sec\left(bx+a\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4*(d*tan(b*x+a))^n,x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a)^4, x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int \left(\sec^4(bx+a)\right)(d\tan(bx+a))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^4*(d*tan(b*x+a))^n,x)
```

```
[Out] int(sec(b*x+a)^4*(d*tan(b*x+a))^n,x)
```

maxima [A] time = 1.24, size = 51, normalized size = 1.04

$$\frac{\frac{d^n \tan(bx+a)^n \tan(bx+a)^3}{n+3} + \frac{(d\tan(bx+a))^{n+1}}{d(n+1)}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^4*(d*tan(b*x+a))^n,x, algorithm="maxima")
```

```
[Out] (d^n*tan(b*x + a)^n*tan(b*x + a)^3/(n + 3) + (d*tan(b*x + a))^(n + 1)/(d*(n
 + 1)))/b
```

mupad [B] time = 3.84, size = 139, normalized size = 2.84

$$-\frac{2\left(-\frac{d\,\sin(2\,a+2\,b\,x)}{2\sin(a+b\,x)^2-2}\right)^n\,(9\,\sin(2\,a+2\,b\,x)+6\,\sin(4\,a+4\,b\,x)+\sin(6\,a+6\,b\,x)+4\,n\,\sin(2\,a+2\,b\,x)+2\,n\,\sin(4}{b\,\left(n^2+4\,n+3\right)\,\left(30\sin(a+b\,x)^2+12\sin(2\,a+2\,b\,x)^2+2\sin(3\,a+3\,b\,x)^2-32\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^n/cos(a + b*x)^4,x)
```

```
[Out] -(2*(-(d*sin(2*a + 2*b*x))/(2*sin(a + b*x)^2 - 2))^n*(9*sin(2*a + 2*b*x) +
6*sin(4*a + 4*b*x) + sin(6*a + 6*b*x) + 4*n*sin(2*a + 2*b*x) + 2*n*sin(4*a
+ 4*b*x)))/(b*(4*n + n^2 + 3)*(12*sin(2*a + 2*b*x)^2 + 2*sin(3*a + 3*b*x)^2
 + 30*sin(a + b*x)^2 - 32))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \sec^4(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**4*(d*tan(b*x+a))**n,x)
```

```
[Out] Integral((d*tan(a + b*x))**n*sec(a + b*x)**4, x)
```

3.365 $\int \sec^2(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=24

$$\frac{(d\tan(a+bx))^{n+1}}{bd(n+1)}$$

```
[Out] (d*tan(b*x+a))^(1+n)/b/d/(1+n)
```

Rubi [A] time = 0.04, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2607, 32}

$$\frac{(d\tan(a+bx))^{n+1}}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^2*(d*Tan[a + b*x])^n,x]
```

```
[Out] (d*Tan[a + b*x])^(1 + n)/(b*d*(1 + n))
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\begin{aligned}\int \sec^2(a+bx)(d\tan(a+bx))^n\,dx &= \frac{\text{Subst}\left(\int (dx)^n\,dx, x, \tan(a+bx)\right)}{b}\\ &= \frac{(d\tan(a+bx))^{1+n}}{bd(1+n)}\end{aligned}$$

Mathematica [A] time = 0.02, size = 25, normalized size = 1.04

$$\frac{\tan(a+bx)(d\tan(a+bx))^n}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^2*(d*Tan[a + b*x])^n,x]
```

```
[Out] (Tan[a + b*x]*(d*Tan[a + b*x])^n)/(b*(1 + n))
```

fricas [A] time = 0.54, size = 40, normalized size = 1.67

$$\frac{\left(\frac{d\sin(bx+a)}{\cos(bx+a)}\right)^{n}\sin\left(bx+a\right)}{(bn+b)\cos\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] (d*sin(b*x + a)/cos(b*x + a))^n*sin(b*x + a)/((b*n + b)*cos(b*x + a))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\tan\left(bx+a\right)\right)^{n}\sec\left(bx+a\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2*(d*tan(b*x+a))^n,x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a)^2, x)
```

maple [A] time = 0.11, size = 25, normalized size = 1.04

$$\frac{\left(d\tan\left(bx+a\right)\right)^{1+n}}{bd\left(1+n\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^2*(d*tan(b*x+a))^n,x)
```

```
[Out] (d*tan(b*x+a))^(1+n)/b/d/(1+n)
```

maxima [A] time = 0.73, size = 24, normalized size = 1.00

$$\frac{\left(d\tan\left(bx+a\right)\right)^{n+1}}{bd(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^2*(d*tan(b*x+a))^n,x, algorithm="maxima")
```

```
[Out] (d*tan(b*x + a))^(n + 1)/(b*d*(n + 1))
```

mupad [B] time = 2.64, size = 49, normalized size = 2.04

$$\frac{\sin\left(2\,a+2\,b\,x\right)\,{\left(\frac{d\,\sin(2\,a+2\,b\,x)}{2\,{\cos(a+b\,x)}^2}\right)}^n}{2\,b\,{\cos\left(a+b\,x\right)}^2\,\left(n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^n/cos(a + b*x)^2,x)
[Out] (sin(2*a + 2*b*x)*((d*sin(2*a + 2*b*x))/(2*cos(a + b*x)^2))^n)/(2*b*cos(a +
 b*x)^2*(n + 1))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \sec^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**2*(d*tan(b*x+a))**n,x)
[Out] Integral((d*tan(a + b*x))**n*sec(a + b*x)**2, x)
```

3.366 $\int (d\tan(a+bx))^n\,dx$

Optimal. Leaf size=50

$$\frac{(d\tan(a+bx))^{n+1}\,{}_2F_1\left(1,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] hypergeom([1, 1/2+1/2*n],[3/2+1/2*n],-tan(b*x+a)^2)*(d*tan(b*x+a))^(1+n)/b/
d/(1+n)
```

Rubi [A] time = 0.03, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {3476, 364}

$$\frac{(d\tan(a+bx))^{n+1}\,{}_2F_1\left(1,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(d*Tan[a + b*x])^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + n)/2, (3 + n)/2, -Tan[a + b*x]^2]*(d*Tan[a + b*x
])^(1 + n))/(b*d*(1 + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 3476

```
Int[((b_.)*tan[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Dist[b/d, Subst[Int[
x^n/(b^2 + x^2), x], x, b*Tan[c + d*x]], x] /; FreeQ[{b, c, d, n}, x] && !
IntegerQ[n]
```

Rubi steps

$$\int (d\tan(a+bx))^n\,dx = \frac{d\,\mathrm{Subst}\left(\int \frac{x^n}{d^2+x^2}\,dx, x, d\tan(a+bx)\right)}{b}$$
$$= \frac{{}_2F_1\left(1, \frac{1+n}{2}; \frac{3+n}{2}; -\tan^2(a+bx)\right)(d\tan(a+bx))^{1+n}}{bd(1+n)}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 1.06

$$\frac{\tan(a+bx)(d\tan(a+bx))^n\,{}_2F_1\left(1, \frac{n+1}{2}; \frac{n+1}{2}+1; -\tan^2(a+bx)\right)}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*Tan[a + b*x])^n,x]
```

```
[Out] (Hypergeometric2F1[1, (1 + n)/2, 1 + (1 + n)/2, -Tan[a + b*x]^2]*Tan[a + b*
x]*(d*Tan[a + b*x])^n)/(b*(1 + n))
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((d\tan(bx+a))^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] integral((d*tan(b*x + a))^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))^n,x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^n, x)
```

maple [F] time = 0.72, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(b*x+a))^n,x)
```

```
[Out] int((d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))^n,x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int (d\tan(a+b\,x))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^n,x)
```

```
[Out] int((d*tan(a + b*x))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*tan(b*x+a))**n,x)
```

```
[Out] Integral((d*tan(a + b*x))**n, x)
```

3.367 $\int \cos^2(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=50

$$\frac{(d\tan(a+bx))^{n+1}\,{}_2F_1\left(2,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] hypergeom([2, 1/2+1/2*n],[3/2+1/2*n],-tan(b*x+a)^2)*(d*tan(b*x+a))^(1+n)/b/
d/(1+n)
```

Rubi [A] time = 0.05, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2607, 364}

$$\frac{(d\tan(a+bx))^{n+1}\,{}_2F_1\left(2,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^2*(d*Tan[a + b*x])^n,x]
```

```
[Out] (Hypergeometric2F1[2, (1 + n)/2, (3 + n)/2, -Tan[a + b*x]^2]*(d*Tan[a + b*x
])^(1 + n))/(b*d*(1 + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] &&  !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \cos^2(a+bx)(d\tan(a+bx))^n\,dx = \frac{\text{Subst}\left(\int \frac{(dx)^n}{\left(1+x^2\right)^2}\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{{}_2F_1\left(2, \frac{1+n}{2}; \frac{3+n}{2}; -\tan^2(a+bx)\right)(d\tan(a+bx))^{1+n}}{bd(1+n)}$$

Mathematica [C] time = 4.10, size = 939, normalized size = 18.78

$$b\left(\frac{2(n+1)\left(-F_1\left(\frac{n+3}{2};n,2;\frac{n+5}{2};\tan^2\left(\frac{1}{2}(a+bx)\right),-\tan^2\left(\frac{1}{2}(a+bx)\right)\right)+8F_1\left(\frac{n+3}{2};n,3;\frac{n+5}{2};\tan^2\left(\frac{1}{2}(a+bx)\right),-\tan^2\left(\frac{1}{2}(a+bx)\right)\right)-12F_1\left(\frac{n+3}{2};n,4;\frac{n+5}{2};\tan^2\left(\frac{1}{2}(a+bx\right.\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cos[a + b*x]^2*(d*Tan[a + b*x])^n,x]
```

```
[Out] (2*(AppellF1[(1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)
/2]^2] - 4*AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a
 + b*x)/2]^2] + 4*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(a + b*x)/2]^2,
-Tan[(a + b*x)/2]^2])*Cos[a + b*x]^2*Tan[(a + b*x)/2]*(d*Tan[a + b*x])^n)/(
b*((AppellF1[(1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)
/2]^2] - 4*AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a
 + b*x)/2]^2] + 4*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(a + b*x)/2]^2,
-Tan[(a + b*x)/2]^2])*Sec[(a + b*x)/2]^2 + n*(AppellF1[(1 + n)/2, n, 1, (3
+ n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 4*AppellF1[(1 + n)/2, n,
 2, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + 4*AppellF1[(1 + n
)/2, n, 3, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2])*Sec[(a + b*
x)/2]^2*Sec[a + b*x] + (2*(1 + n)*(-AppellF1[(3 + n)/2, n, 2, (5 + n)/2, Ta
n[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + 8*AppellF1[(3 + n)/2, n, 3, (5 + n
)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 12*AppellF1[(3 + n)/2, n, 4
, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + n*AppellF1[(3 + n)/
2, 1 + n, 1, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 4*n*Appe
llF1[(3 + n)/2, 1 + n, 2, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^
2] + 4*n*AppellF1[(3 + n)/2, 1 + n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[
(a + b*x)/2]^2])*Sec[(a + b*x)/2]^2*Tan[(a + b*x)/2]^2)/(3 + n) - 2*n*(Appe
llF1[(1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] -
 4*AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/
2]^2] + 4*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a
+ b*x)/2]^2])*Sec[a + b*x]*Tan[(a + b*x)/2]^2))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left((d\tan(bx+a))^n\cos(bx+a)^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2*(d*tan(b*x+a))^n,x, algorithm="fricas")
[Out] integral((d*tan(b*x + a))^n*cos(b*x + a)^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\cos(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2*(d*tan(b*x+a))^n,x, algorithm="giac")
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a)^2, x)
```

maple [F] time = 1.49, size = 0, normalized size = 0.00

$$\int \left(\cos^2(bx+a)\right)(d\tan(bx+a))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^2*(d*tan(b*x+a))^n,x)
[Out] int(cos(b*x+a)^2*(d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\cos(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^2*(d*tan(b*x+a))^n,x, algorithm="maxima")
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cos(a+b\,x)^2\,(d\tan(a+b\,x))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^2*(d*tan(a + b*x))^n,x)
[Out] int(cos(a + b*x)^2*(d*tan(a + b*x))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \cos^2(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**2*(d*tan(b*x+a))**n,x)
[Out] Integral((d*tan(a + b*x))**n*cos(a + b*x)**2, x)
```

3.368 $\int \cos^4(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=50

$$\frac{(d\tan(a+bx))^{n+1}\,{}_2F_1\left(3,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] hypergeom([3, 1/2+1/2*n],[3/2+1/2*n],-tan(b*x+a)^2)*(d*tan(b*x+a))^(1+n)/b/
d/(1+n)
```

Rubi [A] time = 0.04, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2607, 364}

$$\frac{(d\tan(a+bx))^{n+1}\,{}_2F_1\left(3,\frac{n+1}{2};\frac{n+3}{2};-\tan^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^4*(d*Tan[a + b*x])^n,x]
```

```
[Out] (Hypergeometric2F1[3, (1 + n)/2, (3 + n)/2, -Tan[a + b*x]^2]*(d*Tan[a + b*x
])^(1 + n))/(b*d*(1 + n))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2607

```
Int[sec[(e_.) + (f_.)*(x_)]^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_.), x_S
ymbol] :> Dist[1/f, Subst[Int[(b*x)^n*(1 + x^2)^(m/2 - 1), x], x, Tan[e + f
*x]], x] /; FreeQ[{b, e, f, n}, x] && IntegerQ[m/2] && !(IntegerQ[(n - 1)/
2] && LtQ[0, n, m - 1])
```

Rubi steps

$$\int \cos^4(a+bx)(d\tan(a+bx))^n\,dx = \frac{\text{Subst}\left(\int \frac{(dx)^n}{(1+x^2)^3}\,dx, x, \tan(a+bx)\right)}{b}$$
$$= \frac{{}_2F_1\left(3, \frac{1+n}{2}; \frac{3+n}{2}; -\tan^2(a+bx)\right)(d\tan(a+bx))^{1+n}}{bd(1+n)}$$

Mathematica [C] time = 12.63, size = 1712, normalized size = 34.24

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cos[a + b*x]^4*(d*Tan[a + b*x])^n,x]
```

```
[Out] (-8*(3 + n)*(AppellF1[(1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[
(a + b*x)/2]^2] - 8*(AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^
2, -Tan[(a + b*x)/2]^2] - 3*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(a + b
*x)/2]^2, -Tan[(a + b*x)/2]^2] + 4*AppellF1[(1 + n)/2, n, 4, (3 + n)/2, Tan
[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 2*AppellF1[(1 + n)/2, n, 5, (3 + n)
/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]))*Cos[(a + b*x)/2]^3*Cos[a + b
*x]^5*Sin[(a + b*x)/2]^2*(d*Tan[a + b*x])^n)/(b*(1 + n)*((3 + n)*AppellF1[(
1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*(1 + Co
s[a + b*x]) + 2*(16*AppellF1[(3 + n)/2, n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2
, -Tan[(a + b*x)/2]^2] - 72*AppellF1[(3 + n)/2, n, 4, (5 + n)/2, Tan[(a + b
*x)/2]^2, -Tan[(a + b*x)/2]^2] + 128*AppellF1[(3 + n)/2, n, 5, (5 + n)/2, T
an[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 80*AppellF1[(3 + n)/2, n, 6, (5 +
 n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + n*AppellF1[(3 + n)/2, 1 +
 n, 1, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 8*n*AppellF1[(
3 + n)/2, 1 + n, 2, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + 2
4*n*AppellF1[(3 + n)/2, 1 + n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a +
b*x)/2]^2] - 32*n*AppellF1[(3 + n)/2, 1 + n, 4, (5 + n)/2, Tan[(a + b*x)/2]
^2, -Tan[(a + b*x)/2]^2] + 16*n*AppellF1[(3 + n)/2, 1 + n, 5, (5 + n)/2, Ta
n[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 24*AppellF1[(1 + n)/2, n, 2, (3 +
n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[(a + b*x)/2]^2 - 8*n*App
ellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*
Cos[(a + b*x)/2]^2 + 72*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(a + b*x)/
2]^2, -Tan[(a + b*x)/2]^2]*Cos[(a + b*x)/2]^2 + 24*n*AppellF1[(1 + n)/2, n,
 3, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[(a + b*x)/2]^2
- 96*AppellF1[(1 + n)/2, n, 4, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x
)/2]^2]*Cos[(a + b*x)/2]^2 - 32*n*AppellF1[(1 + n)/2, n, 4, (3 + n)/2, Tan[
(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[(a + b*x)/2]^2 + AppellF1[(3 + n)/
```

```
2, n, 2, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*(-1 + Cos[a +
b*x]) - 16*AppellF1[(3 + n)/2, n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a
 + b*x)/2]^2]*Cos[a + b*x] + 72*AppellF1[(3 + n)/2, n, 4, (5 + n)/2, Tan[(a
 + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] - 128*AppellF1[(3 + n)/2, n
, 5, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] + 80*
AppellF1[(3 + n)/2, n, 6, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^
2]*Cos[a + b*x] - n*AppellF1[(3 + n)/2, 1 + n, 1, (5 + n)/2, Tan[(a + b*x)/
2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] + 8*n*AppellF1[(3 + n)/2, 1 + n, 2,
 (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] - 24*n*Ap
pellF1[(3 + n)/2, 1 + n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2
]^2]*Cos[a + b*x] + 32*n*AppellF1[(3 + n)/2, 1 + n, 4, (5 + n)/2, Tan[(a +
b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] - 16*n*AppellF1[(3 + n)/2, 1 +
 n, 5, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] + 8
*(3 + n)*AppellF1[(1 + n)/2, n, 5, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a +
 b*x)/2]^2]*(1 + Cos[a + b*x])))*(Sin[(a + b*x)/2] - Sin[(3*(a + b*x))/2]))
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left((d\tan(bx+a))^n\cos(bx+a)^4, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^4*(d*tan(b*x+a))^n,x, algorithm="fricas")
[Out] integral((d*tan(b*x + a))^n*cos(b*x + a)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\cos(bx+a)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^4*(d*tan(b*x+a))^n,x, algorithm="giac")
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a)^4, x)
```

maple [F] time = 1.52, size = 0, normalized size = 0.00

$$\int \left(\cos^4(bx+a)\right)(d\tan(bx+a))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^4*(d*tan(b*x+a))^n,x)
[Out] int(cos(b*x+a)^4*(d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n \cos(bx+a)^4 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^4*(d*tan(b*x+a))^n,x, algorithm="maxima")
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cos(a+b\,x)^4 \,(d\tan(a+b\,x))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^4*(d*tan(a + b*x))^n,x)
[Out] int(cos(a + b*x)^4*(d*tan(a + b*x))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \cos^4(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**4*(d*tan(b*x+a))**n,x)
[Out] Integral((d*tan(a + b*x))**n*cos(a + b*x)**4, x)
```

3.369 $\int \sec^5(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=78

$$\frac{\sec^5(a+bx)\cos^2(a+bx)^{\frac{n+6}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+6}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] (cos(b*x+a)^2)^(3+1/2*n)*hypergeom([3+1/2*n, 1/2+1/2*n],[3/2+1/2*n],sin(b*x
+a)^2)*sec(b*x+a)^5*(d*tan(b*x+a))^(1+n)/b/d/(1+n)
```

Rubi [A] time = 0.04, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$\frac{\sec^5(a+bx)\cos^2(a+bx)^{\frac{n+6}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+6}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^5*(d*Tan[a + b*x])^n,x]
```

```
[Out] ((Cos[a + b*x]^2)^((6 + n)/2)*Hypergeometric2F1[(1 + n)/2, (6 + n)/2, (3 +
n)/2, Sin[a + b*x]^2]*Sec[a + b*x]^5*(d*Tan[a + b*x])^(1 + n))/(b*d*(1 + n)
)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sec^5(a+bx)(d\tan(a+bx))^n\,dx = \frac{\cos^2(a+bx)^{\frac{6+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{6+n}{2};\frac{3+n}{2};\sin^2(a+bx)\right)\sec^5(a+bx)(d\tan(a+b$$

$$bd(1+n)$$

Mathematica [A] time = 0.13, size = 72, normalized size = 0.92

$$\frac{d\sec^5(a+bx)\left(-\tan^2(a+bx)\right)^{\frac{1-n}{2}}(d\tan(a+bx))^{n-1}\,{}_2F_1\left(\frac{5}{2},\frac{1-n}{2};\frac{7}{2};\sec^2(a+bx)\right)}{5b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^5*(d*Tan[a + b*x])^n,x]
```

```
[Out] (d*Hypergeometric2F1[5/2, (1 - n)/2, 7/2, Sec[a + b*x]^2]*Sec[a + b*x]^5*(d
*Tan[a + b*x])^(-1 + n)*(-Tan[a + b*x]^2)^((1 - n)/2))/(5*b)
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left((d\tan(bx+a))^n\sec(bx+a)^5, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] integral((d*tan(b*x + a))^n*sec(b*x + a)^5, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\sec(bx+a)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5*(d*tan(b*x+a))^n,x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a)^5, x)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \left(\sec^5(bx+a)\right)(d\tan(bx+a))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^5*(d*tan(b*x+a))^n,x)
```

```
[Out] int(sec(b*x+a)^5*(d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\sec(bx+a)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^5*(d*tan(b*x+a))^n,x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a)^5, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(d\tan(a+b\,x))^n}{\cos(a+b\,x)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^n/cos(a + b*x)^5,x)
```

```
[Out] int((d*tan(a + b*x))^n/cos(a + b*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \sec^5(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**5*(d*tan(b*x+a))**n,x)
```

```
[Out] Integral((d*tan(a + b*x))**n*sec(a + b*x)**5, x)
```

3.370 $\int \sec^3(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=78

$$\frac{\sec^3(a+bx)\cos^2(a+bx)^{\frac{n+4}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+4}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] (cos(b*x+a)^2)^(2+1/2*n)*hypergeom([2+1/2*n, 1/2+1/2*n],[3/2+1/2*n],sin(b*x
+a)^2)*sec(b*x+a)^3*(d*tan(b*x+a))^(1+n)/b/d/(1+n)
```

Rubi [A] time = 0.04, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$\frac{\sec^3(a+bx)\cos^2(a+bx)^{\frac{n+4}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+4}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]^3*(d*Tan[a + b*x])^n,x]
```

```
[Out] ((Cos[a + b*x]^2)^((4 + n)/2)*Hypergeometric2F1[(1 + n)/2, (4 + n)/2, (3 +
n)/2, Sin[a + b*x]^2]*Sec[a + b*x]^3*(d*Tan[a + b*x])^(1 + n))/(b*d*(1 + n)
)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sec^3(a+bx)(d\tan(a+bx))^n\,dx=\frac{\cos^2(a+bx)^{\frac{4+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{4+n}{2};\frac{3+n}{2};\sin^2(a+bx)\right)\sec^3(a+bx)(d\tan(a+bx)}{bd(1+n)}$$

Mathematica [A] time = 0.10, size = 72, normalized size = 0.92

$$\frac{d\sec^3(a+bx)\left(-\tan^2(a+bx)\right)^{\frac{1-n}{2}}(d\tan(a+bx))^{n-1}\,{}_2F_1\left(\frac{3}{2},\frac{1-n}{2};\frac{5}{2};\sec^2(a+bx)\right)}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]^3*(d*Tan[a + b*x])^n,x]
```

```
[Out] (d*Hypergeometric2F1[3/2, (1 - n)/2, 5/2, Sec[a + b*x]^2]*Sec[a + b*x]^3*(d
*Tan[a + b*x])^(-1 + n)*(-Tan[a + b*x]^2)^((1 - n)/2))/(3*b)
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((d\tan(bx+a))^n\sec(bx+a)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] integral((d*tan(b*x + a))^n*sec(b*x + a)^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\sec(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3*(d*tan(b*x+a))^n,x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a)^3, x)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \left(\sec^3(bx+a)\right)(d\tan(bx+a))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)^3*(d*tan(b*x+a))^n,x)
```

```
[Out] int(sec(b*x+a)^3*(d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\sec(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)^3*(d*tan(b*x+a))^n,x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(d\tan(a+b\,x))^n}{\cos(a+b\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^n/cos(a + b*x)^3,x)
[Out] int((d*tan(a + b*x))^n/cos(a + b*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \sec^3(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)**3*(d*tan(b*x+a))**n,x)
[Out] Integral((d*tan(a + b*x))**n*sec(a + b*x)**3, x)
```

3.371 $\int \sec(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=76

$$\frac{\sec(a+bx)\cos^2(a+bx)^{\frac{n+2}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+2}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] (cos(b*x+a)^2)^(1+1/2*n)*hypergeom([1+1/2*n, 1/2+1/2*n],[3/2+1/2*n],sin(b*x
+a)^2)*sec(b*x+a)*(d*tan(b*x+a))^(1+n)/b/d/(1+n)
```

Rubi [A] time = 0.02, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {2617}

$$\frac{\sec(a+bx)\cos^2(a+bx)^{\frac{n+2}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{n+2}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[a + b*x]*(d*Tan[a + b*x])^n,x]
```

```
[Out] ((Cos[a + b*x]^2)^((2 + n)/2)*Hypergeometric2F1[(1 + n)/2, (2 + n)/2, (3 +
n)/2, Sin[a + b*x]^2]*Sec[a + b*x]*(d*Tan[a + b*x])^(1 + n))/(b*d*(1 + n))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \sec(a+bx)(d\tan(a+bx))^n\,dx=\frac{\cos^2(a+bx)^{\frac{2+n}{2}}\,{}_2F_1\left(\frac{1+n}{2},\frac{2+n}{2};\frac{3+n}{2};\sin^2(a+bx)\right)\sec(a+bx)(d\tan(a+bx))}{bd(1+n)}$$

Mathematica [A] time = 0.07, size = 64, normalized size = 0.84

$$\frac{\csc(a+bx)\left(-\tan^2(a+bx)\right)^{\frac{1-n}{2}}(d\tan(a+bx))^n\,{}_2F_1\left(\frac{1}{2},\frac{1-n}{2};\frac{3}{2};\sec^2(a+bx)\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[a + b*x]*(d*Tan[a + b*x])^n,x]
```

```
[Out] (Csc[a + b*x]*Hypergeometric2F1[1/2, (1 - n)/2, 3/2, Sec[a + b*x]^2]*(d*Tan
[a + b*x])^n*(-Tan[a + b*x]^2)^((1 - n)/2))/b
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left((d\tan\left(bx+a\right))^n\sec\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] integral((d*tan(b*x + a))^n*sec(b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan\left(bx+a\right))^n\sec\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))^n,x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a), x)
```

maple [F] time = 0.69, size = 0, normalized size = 0.00

$$\int \sec\left(bx+a\right)(d\tan\left(bx+a\right))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(b*x+a)*(d*tan(b*x+a))^n,x)
```

```
[Out] int(sec(b*x+a)*(d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan\left(bx+a\right))^n\sec\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))^n,x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^n*sec(b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(d\tan(a+b\,x))^n}{\cos(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(a + b*x))^n/cos(a + b*x),x)
[Out] int((d*tan(a + b*x))^n/cos(a + b*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n \sec(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(b*x+a)*(d*tan(b*x+a))**n,x)
[Out] Integral((d*tan(a + b*x))**n*sec(a + b*x), x)
```

3.372 $\int \cos(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=72

$$\frac{\cos(a+bx)\cos^2(a+bx)^{n/2}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n}{2},\frac{n+1}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] cos(b*x+a)*(cos(b*x+a)^2)^(1/2*n)*hypergeom([1/2*n, 1/2+1/2*n],[3/2+1/2*n],
sin(b*x+a)^2)*(d*tan(b*x+a))^(1+n)/b/d/(1+n)
```

Rubi [A] time = 0.03, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {2617}

$$\frac{\cos(a+bx)\cos^2(a+bx)^{n/2}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n}{2},\frac{n+1}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]*(d*Tan[a + b*x])^n,x]
```

```
[Out] (Cos[a + b*x]*(Cos[a + b*x]^2)^(n/2)*Hypergeometric2F1[n/2, (1 + n)/2, (3 +
 n)/2, Sin[a + b*x]^2]*(d*Tan[a + b*x])^(1 + n))/(b*d*(1 + n))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \cos(a+bx)(d\tan(a+bx))^n\,dx = \frac{\cos(a+bx)\cos^2(a+bx)^{n/2}\,{}_2F_1\left(\frac{n}{2},\frac{1+n}{2};\frac{3+n}{2};\sin^2(a+bx)\right)(d\tan(a+bx))^{1+n}}{bd(1+n)}$$

Mathematica [C] time = 2.39, size = 452, normalized size = 6.28

$$-\frac{2\sin\left(\frac{1}{2}(a+bx)\right)\cos\left(\frac{1}{2}(a+bx)\right)\cos(a+bx)}{b(n+1)\left(\frac{\sec^2\left(\frac{1}{2}(a+bx)\right)\left((n+3)(\cos(a+bx)+1)F_1\left(\frac{n+1}{2};n,2;\frac{n+3}{2};\tan^2\left(\frac{1}{2}(a+bx)\right),-\tan^2\left(\frac{1}{2}(a+bx)\right)\right)-(\cos(a+bx)-1)\left(F_1\left(\frac{n+3}{2};n,2;\frac{n+5}{2};\tan^2\left(\frac{1}{2}(a+bx)\right)\right.\right.\right.}{}\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cos[a + b*x]*(d*Tan[a + b*x])^n,x]
```

```
[Out] (-2*(AppellF1[(1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x
)/2]^2] - 2*AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(
a + b*x)/2]^2])*Cos[(a + b*x)/2]*Cos[a + b*x]*Sin[(a + b*x)/2]*(d*Tan[a + b
*x])^n)/(b*(1 + n)*(-AppellF1[(1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^
2, -Tan[(a + b*x)/2]^2] + ((-((AppellF1[(3 + n)/2, n, 2, (5 + n)/2, Tan[(a
+ b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 4*AppellF1[(3 + n)/2, n, 3, (5 + n)/2,
Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - n*AppellF1[(3 + n)/2, 1 + n, 1,
(5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + 2*n*AppellF1[(3 + n)/
2, 1 + n, 2, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2])*(-1 + Cos
[a + b*x])) + (3 + n)*AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]
^2, -Tan[(a + b*x)/2]^2]*(1 + Cos[a + b*x]))*Sec[(a + b*x)/2]^2)/(3 + n)))
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left((d\tan(bx+a))^n\cos(bx+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] integral((d*tan(b*x + a))^n*cos(b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\cos(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))^n,x, algorithm="giac")
```

```
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a), x)
```

maple [F] time = 1.30, size = 0, normalized size = 0.00

$$\int \cos(bx+a)\,(d\tan(bx+a))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)*(d*tan(b*x+a))^n,x)
```

```
[Out] int(cos(b*x+a)*(d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n\cos(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))^n,x, algorithm="maxima")
```

```
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \cos(a+b\,x)\,\left(d\tan(a+b\,x)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)*(d*tan(a + b*x))^n,x)
```

```
[Out] int(cos(a + b*x)*(d*tan(a + b*x))^n, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(a+bx))^n\cos(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)*(d*tan(b*x+a))**n,x)
```

```
[Out] Integral((d*tan(a + b*x))**n*cos(a + b*x), x)
```

3.373 $\int \cos^3(a+bx)(d\tan(a+bx))^n\,dx$

Optimal. Leaf size=78

$$\frac{\cos^3(a+bx)\cos^2(a+bx)^{\frac{n-2}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n-2}{2},\frac{n+1}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

```
[Out] cos(b*x+a)^3*(cos(b*x+a)^2)^(-1+1/2*n)*hypergeom([-1+1/2*n, 1/2+1/2*n],[3/2
+1/2*n],sin(b*x+a)^2)*(d*tan(b*x+a))^(1+n)/b/d/(1+n)
```

Rubi [A] time = 0.04, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$\frac{\cos^3(a+bx)\cos^2(a+bx)^{\frac{n-2}{2}}(d\tan(a+bx))^{n+1}\,{}_2F_1\left(\frac{n-2}{2},\frac{n+1}{2};\frac{n+3}{2};\sin^2(a+bx)\right)}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[a + b*x]^3*(d*Tan[a + b*x])^n,x]
```

```
[Out] (Cos[a + b*x]^3*(Cos[a + b*x]^2)^((-2 + n)/2)*Hypergeometric2F1[(-2 + n)/2,
 (1 + n)/2, (3 + n)/2, Sin[a + b*x]^2]*(d*Tan[a + b*x])^(1 + n))/(b*d*(1 +
n))
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \cos^3(a+bx)(d\tan(a+bx))^n\,dx=\frac{\cos^3(a+bx)\cos^2(a+bx)^{\frac{1}{2}(-2+n)}\,{}_2F_1\left(\frac{1}{2}(-2+n),\frac{1+n}{2};\frac{3+n}{2};\sin^2(a+bx)\right)(d}{bd(1+n)}$$

Mathematica [C] time = 6.23, size = 1313, normalized size = 16.83

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[Cos[a + b*x]^3*(d*Tan[a + b*x])^n,x]
```

```
[Out] (4*(3 + n)*(AppellF1[(1 + n)/2, n, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(
a + b*x)/2]^2] - 6*AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^2,
 -Tan[(a + b*x)/2]^2] + 12*AppellF1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(a + b*
x)/2]^2, -Tan[(a + b*x)/2]^2] - 8*AppellF1[(1 + n)/2, n, 4, (3 + n)/2, Tan[
(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2])*Cos[(a + b*x)/2]^3*Cos[a + b*x]^3*Sin
[(a + b*x)/2]*(d*Tan[a + b*x])^n)/(b*(1 + n)*((3 + n)*AppellF1[(1 + n)/2, n
, 1, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*(1 + Cos[a + b*x])
 - 2*(AppellF1[(3 + n)/2, n, 2, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*
x)/2]^2] - 12*AppellF1[(3 + n)/2, n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan
[(a + b*x)/2]^2] + 36*AppellF1[(3 + n)/2, n, 4, (5 + n)/2, Tan[(a + b*x)/2]
^2, -Tan[(a + b*x)/2]^2] - 32*AppellF1[(3 + n)/2, n, 5, (5 + n)/2, Tan[(a +
 b*x)/2]^2, -Tan[(a + b*x)/2]^2] - n*AppellF1[(3 + n)/2, 1 + n, 1, (5 + n)/
2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + 6*n*AppellF1[(3 + n)/2, 1 + n
, 2, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] - 12*n*AppellF1[(3
 + n)/2, 1 + n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2] + 8*
n*AppellF1[(3 + n)/2, 1 + n, 4, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*
x)/2]^2] + 18*AppellF1[(1 + n)/2, n, 2, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan
[(a + b*x)/2]^2]*Cos[(a + b*x)/2]^2 + 6*n*AppellF1[(1 + n)/2, n, 2, (3 + n)
/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[(a + b*x)/2]^2 + 8*(3 + n)
*AppellF1[(1 + n)/2, n, 4, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]
^2]*Cos[(a + b*x)/2]^2 - AppellF1[(3 + n)/2, n, 2, (5 + n)/2, Tan[(a + b*x)
/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] + 12*AppellF1[(3 + n)/2, n, 3, (5
+ n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] - 36*AppellF1
[(3 + n)/2, n, 4, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a
 + b*x] + 32*AppellF1[(3 + n)/2, n, 5, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[
(a + b*x)/2]^2]*Cos[a + b*x] + n*AppellF1[(3 + n)/2, 1 + n, 1, (5 + n)/2, T
an[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] - 6*n*AppellF1[(3 + n)
/2, 1 + n, 2, (5 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b
*x] + 12*n*AppellF1[(3 + n)/2, 1 + n, 3, (5 + n)/2, Tan[(a + b*x)/2]^2, -Ta
n[(a + b*x)/2]^2]*Cos[a + b*x] - 8*n*AppellF1[(3 + n)/2, 1 + n, 4, (5 + n)/
2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*Cos[a + b*x] - 6*(3 + n)*Appell
F1[(1 + n)/2, n, 3, (3 + n)/2, Tan[(a + b*x)/2]^2, -Tan[(a + b*x)/2]^2]*(1
+ Cos[a + b*x]))))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(d\tan\left(bx+a\right)\right)^{n}\cos\left(bx+a\right)^{3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3*(d*tan(b*x+a))^n,x, algorithm="fricas")
```

```
[Out] integral((d*tan(b*x + a))^n*cos(b*x + a)^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n \cos(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3*(d*tan(b*x+a))^n,x, algorithm="giac")
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a)^3, x)
```

maple [F] time = 1.89, size = 0, normalized size = 0.00

$$\int \left(\cos^3(bx+a)\right)(d\tan(bx+a))^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(b*x+a)^3*(d*tan(b*x+a))^n,x)
[Out] int(cos(b*x+a)^3*(d*tan(b*x+a))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\tan(bx+a))^n \cos(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)^3*(d*tan(b*x+a))^n,x, algorithm="maxima")
[Out] integrate((d*tan(b*x + a))^n*cos(b*x + a)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \cos(a+b\,x)^3\,(d\tan(a+b\,x))^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(a + b*x)^3*(d*tan(a + b*x))^n,x)
[Out] int(cos(a + b*x)^3*(d*tan(a + b*x))^n, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(b*x+a)**3*(d*tan(b*x+a))**n,x)
```

```
[Out] Timed out
```

3.374 $\int (b \csc(e + fx))^m \tan^3(e + fx) \, dx$

Optimal. Leaf size=40

$$-\frac{(b \csc(e+fx))^m \, _2F_1\left(2,\frac{m}{2};\frac{m+2}{2};\csc^2(e+fx)\right)}{fm}$$

```
[Out] -(b*csc(f*x+e))^m*hypergeom([2, 1/2*m],[1+1/2*m],csc(f*x+e)^2)/f/m
```

Rubi [A] time = 0.05, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2606, 364}

$$-\frac{(b \csc(e+fx))^m \, _2F_1\left(2,\frac{m}{2};\frac{m+2}{2};\csc^2(e+fx)\right)}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Csc[e + f*x])^m*Tan[e + f*x]^3,x]
```

```
[Out] -(((b*Csc[e + f*x])^m*Hypergeometric2F1[2, m/2, (2 + m)/2, Csc[e + f*x]^2])
/(f*m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\int (b\csc(e+fx))^m \tan^3(e+fx)\,dx = -\frac{b\,\text{Subst}\left(\int \frac{(bx)^{-1+m}}{\left(-1+x^2\right)^2}\,dx, x, \csc(e+fx)\right)}{f}$$
$$= -\frac{(b\csc(e+fx))^m\,{}_2F_1\left(2,\frac{m}{2};\frac{2+m}{2};\csc^2(e+fx)\right)}{fm}$$

Mathematica [A] time = 0.10, size = 52, normalized size = 1.30

$$-\frac{\sin^4(e+fx)(b\csc(e+fx))^m\,{}_2F_1\left(2,2-\frac{m}{2};3-\frac{m}{2};\sin^2(e+fx)\right)}{f(m-4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m*Tan[e + f*x]^3,x]
```

```
[Out] -(((b*Csc[e + f*x])^m*Hypergeometric2F1[2, 2 - m/2, 3 - m/2, Sin[e + f*x]^2
]*Sin[e + f*x]^4)/(f*(-4 + m)))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\csc\left(fx+e\right)\right)^m \tan\left(fx+e\right)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^3,x, algorithm="fricas")
```

```
[Out] integral((b*csc(f*x + e))^m*tan(f*x + e)^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^m \tan\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^3,x, algorithm="giac")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e)^3, x)
```

maple [F] time = 0.49, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^m \left(\tan^3\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m*tan(f*x+e)^3,x)
```

```
[Out] int((b*csc(f*x+e))^m*tan(f*x+e)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^3,x, algorithm="maxima")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^{3}\,\left(\frac{b}{\sin\left(e+f\,x\right)}\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^3*(b/sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)^3*(b/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(e+fx\right)\right)^{m}\tan^{3}\left(e+fx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m*tan(f*x+e)**3,x)
```

```
[Out] Integral((b*csc(e + f*x))**m*tan(e + f*x)**3, x)
```

3.375 $\int (b\csc(e+fx))^m \tan(e+fx)\,dx$

Optimal. Leaf size=39

$$\frac{(b\csc(e+fx))^m\,{}_2F_1\left(1,\frac{m}{2};\frac{m+2}{2};\csc^2(e+fx)\right)}{fm}$$

```
[Out] (b*csc(f*x+e))^m*hypergeom([1, 1/2*m],[1+1/2*m],csc(f*x+e)^2)/f/m
```

Rubi [A] time = 0.04, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {2606, 364}

$$\frac{(b\csc(e+fx))^m\,{}_2F_1\left(1,\frac{m}{2};\frac{m+2}{2};\csc^2(e+fx)\right)}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Csc[e + f*x])^m*Tan[e + f*x],x]
```

```
[Out] ((b*Csc[e + f*x])^m*Hypergeometric2F1[1, m/2, (2 + m)/2, Csc[e + f*x]^2])/(
f*m)
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 && !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\int (b\csc(e+fx))^m \tan(e+fx)\,dx = -\frac{b\,\text{Subst}\left(\int \frac{(bx)^{-1+m}}{-1+x^2}\,dx, x, \csc(e+fx)\right)}{f}$$
$$= \frac{(b\csc(e+fx))^m\, {}_2F_1\left(1, \frac{m}{2}; \frac{2+m}{2}; \csc^2(e+fx)\right)}{fm}$$

Mathematica [A] time = 0.05, size = 52, normalized size = 1.33

$$-\frac{\sin^2(e+fx)(b\csc(e+fx))^m\, {}_2F_1\left(1, 1-\frac{m}{2}; 2-\frac{m}{2}; \sin^2(e+fx)\right)}{f(m-2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m*Tan[e + f*x],x]
```

```
[Out] -(((b*Csc[e + f*x])^m*Hypergeometric2F1[1, 1 - m/2, 2 - m/2, Sin[e + f*x]^2
]*Sin[e + f*x]^2)/(f*(-2 + m)))
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\csc\left(fx+e\right)\right)^m \tan\left(fx+e\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e),x, algorithm="fricas")
```

```
[Out] integral((b*csc(f*x + e))^m*tan(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^m \tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e),x, algorithm="giac")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e), x)
```

maple [F] time = 0.97, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^m \tan\left(fx+e\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m*tan(f*x+e),x)
```

```
[Out] int((b*csc(f*x+e))^m*tan(f*x+e),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \csc \left(fx+e\right)\right)^{m} \tan \left(fx+e\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e),x, algorithm="maxima")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \tan\left(e+f\,x\right)\,{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)*(b/sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)*(b/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \csc{\left(e + f x \right)}\right)^{m} \tan{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m*tan(f*x+e),x)
```

```
[Out] Integral((b*csc(e + f*x))**m*tan(e + f*x), x)
```

3.376 $\int \cot(e+fx)(b\csc(e+fx))^m\,dx$

Optimal. Leaf size=18

$$-\frac{(b\csc(e+fx))^m}{fm}$$

```
[Out] -(b*csc(f*x+e))^m/f/m
```

Rubi [A] time = 0.02, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {2606, 32}

$$-\frac{(b\csc(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]*(b*Csc[e + f*x])^m,x]
```

```
[Out] -((b*Csc[e + f*x])^m/(f*m))
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\begin{aligned}\int \cot(e+fx)(b\csc(e+fx))^m\,dx &= -\frac{b\,\text{Subst}\left(\int (bx)^{-1+m}\,dx, x, \csc(e+fx)\right)}{f}\\ &= -\frac{(b\csc(e+fx))^m}{fm}\end{aligned}$$

Mathematica [A] time = 0.02, size = 18, normalized size = 1.00

$$-\frac{(b\csc(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]*(b*Csc[e + f*x])^m,x]
```

```
[Out] -((b*Csc[e + f*x])^m/(f*m))
```

fricas [A] time = 0.57, size = 20, normalized size = 1.11

$$-\frac{\left(\frac{b}{\sin\left(fx+e\right)}\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*csc(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] -(b/sin(f*x + e))^m/(f*m)
```

giac [A] time = 0.44, size = 21, normalized size = 1.17

$$-\frac{\left(\frac{b}{\sin\left(fx+e\right)}\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*csc(f*x+e))^m,x, algorithm="giac")
```

```
[Out] -(b/sin(f*x + e))^m/(f*m)
```

maple [A] time = 0.05, size = 19, normalized size = 1.06

$$-\frac{\left(b\csc\left(fx+e\right)\right)^{m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)*(b*csc(f*x+e))^m,x)
```

```
[Out] -(b*csc(f*x+e))^m/f/m
```

maxima [A] time = 0.69, size = 21, normalized size = 1.17

$$-\frac{b^{m}\sin\left(fx+e\right)^{-m}}{fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*csc(f*x+e))^m,x, algorithm="maxima")
[Out] -b^m*sin(f*x + e)^(-m)/(f*m)
```

mupad [B] time = 2.84, size = 43, normalized size = 2.39

$$\begin{cases} -\frac{\ln\left(\frac{b}{\sin(e+f\,x)}\right)}{f} & \text{if } m=0 \\ -\frac{\left(\frac{b}{\sin(e+f\,x)}\right)^m}{f\,m} & \text{if } m\neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)*(b/sin(e + f*x))^m,x)
[Out] piecewise(m == 0, -log(b/sin(e + f*x))/f, m ~= 0, -(b/sin(e + f*x))^m/(f*m)
)
```

sympy [A] time = 0.43, size = 56, normalized size = 3.11

$$\begin{cases} x\cot(e) & \text{for } f=0\wedge m=0 \\ x\,(b\csc(e))^m\cot(e) & \text{for } f=0 \\ -\frac{\log\left(\tan^2\left(e+fx\right)+1\right)}{2f}+\frac{\log\left(\tan\left(e+fx\right)\right)}{f} & \text{for } m=0 \\ -\frac{b^m\csc^m\left(e+fx\right)}{fm} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)*(b*csc(f*x+e))**m,x)
[Out] Piecewise((x*cot(e), Eq(f, 0) & Eq(m, 0)), (x*(b*csc(e))**m*cot(e), Eq(f, 0
)), (-log(tan(e + f*x)**2 + 1)/(2*f) + log(tan(e + f*x))/f, Eq(m, 0)), (-b*
*m*csc(e + f*x)**m/(f*m), True))
```

3.377 $\int \cot^3(e+fx)(b\csc(e+fx))^m\,dx$

Optimal. Leaf size=43

$$\frac{(b\csc(e+fx))^m}{fm}-\frac{(b\csc(e+fx))^{m+2}}{b^2f(m+2)}$$

```
[Out] (b*csc(f*x+e))^m/f/m-(b*csc(f*x+e))^(2+m)/b^2/f/(2+m)
```

Rubi [A] time = 0.05, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2606, 14}

$$\frac{(b\csc(e+fx))^m}{fm}-\frac{(b\csc(e+fx))^{m+2}}{b^2f(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^3*(b*Csc[e + f*x])^m,x]
```

```
[Out] (b*Csc[e + f*x])^m/(f*m) - (b*Csc[e + f*x])^(2 + m)/(b^2*f*(2 + m))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\begin{aligned}\int \cot^3(e+fx)(b\csc(e+fx))^m\,dx &= -\frac{b\,\text{Subst}\left(\int (bx)^{-1+m}\left(-1+x^2\right)dx,x,\csc(e+fx)\right)}{f}\\ &= -\frac{b\,\text{Subst}\left(\int \left(-(bx)^{-1+m}+\frac{(bx)^{1+m}}{b^2}\right)dx,x,\csc(e+fx)\right)}{f}\\ &= \frac{(b\csc(e+fx))^m}{fm}-\frac{(b\csc(e+fx))^{2+m}}{b^2f(2+m)}\end{aligned}$$

Mathematica [A] time = 0.08, size = 36, normalized size = 0.84

$$\frac{\left(-m\csc^2(e+fx)+m+2\right)(b\csc(e+fx))^m}{fm(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^3*(b*Csc[e + f*x])^m,x]
```

```
[Out] ((b*Csc[e + f*x])^m*(2 + m - m*Csc[e + f*x]^2))/(f*m*(2 + m))
```

fricas [A] time = 0.55, size = 60, normalized size = 1.40

$$-\frac{\left((m+2)\cos\left(fx+e\right)^2-2\right)\left(\frac{b}{\sin\left(fx+e\right)}\right)^m}{fm^2-\left(fm^2+2\,fm\right)\cos\left(fx+e\right)^2+2\,fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(b*csc(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] -((m + 2)*cos(f*x + e)^2 - 2)*(b/sin(f*x + e))^m/(f*m^2 - (f*m^2 + 2*f*m)*c
os(f*x + e)^2 + 2*f*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^m\cot\left(fx+e\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(b*csc(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((b*csc(f*x + e))^m*cot(f*x + e)^3, x)
```

maple [C] time = 1.26, size = 6612, normalized size = 153.77

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^3*(b*csc(f*x+e))^m,x)
```

```
[Out] result too large to display
```

maxima [A] time = 0.67, size = 50, normalized size = 1.16

$$\frac{\frac{b^m \sin\left(fx+e\right)^{-m}}{m} - \frac{b^m \sin\left(fx+e\right)^{-m}}{(m+2)\sin\left(fx+e\right)^2}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^3*(b*csc(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] (b^m*sin(f*x + e)^(-m)/m - b^m*sin(f*x + e)^(-m)/((m + 2)*sin(f*x + e)^2))/
f
```

mupad [B] time = 3.44, size = 92, normalized size = 2.14

$$\frac{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)^m\,\left(m+4\,\sin\left(2\,e+2\,f\,x\right)^2+m\,\left(2\,\sin\left(2\,e+2\,f\,x\right)^2-1\right)-16\,\sin\left(e+f\,x\right)^2\right)}{f\,m\,\left(2\,\sin\left(2\,e+2\,f\,x\right)^2-8\,\sin\left(e+f\,x\right)^2\right)\,\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^3*(b/sin(e + f*x))^m,x)
```

```
[Out] ((b/sin(e + f*x))^m*(m + 4*sin(2*e + 2*f*x)^2 + m*(2*sin(2*e + 2*f*x)^2 - 1
) - 16*sin(e + f*x)^2))/(f*m*(2*sin(2*e + 2*f*x)^2 - 8*sin(e + f*x)^2)*(m +
 2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\begin{cases} x\left(b\csc\left(e\right)\right)^m\cot^3\left(e\right) & \text{for}\: f = 0 \\ \frac{\int \frac{\cot^3\left(e+fx\right)}{\csc^2\left(e+fx\right)}\, dx}{b^2} & \text{for}\: m = -2 \\ \frac{\log\left(\tan^2\left(e+fx\right)+1\right)}{2f} - \frac{\log\left(\tan\left(e+fx\right)\right)}{f} - \frac{1}{2f\tan^2\left(e+fx\right)} & \text{for}\: m = 0 \\ -\frac{b^m m\cot^2\left(e+fx\right)\csc^m\left(e+fx\right)}{fm^2+2fm} + \frac{2b^m\csc^m\left(e+fx\right)}{fm^2+2fm} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**3*(b*csc(f*x+e))**m,x)
```

```
[Out] Piecewise((x*(b*csc(e))**m*cot(e)**3, Eq(f, 0)), (Integral(cot(e + f*x)**3/
csc(e + f*x)**2, x)/b**2, Eq(m, -2)), (log(tan(e + f*x)**2 + 1)/(2*f) - log
```

```
(tan(e + f*x))/f - 1/(2*f*tan(e + f*x)**2), Eq(m, 0)), (-b**m*m*cot(e + f*x
)**2*csc(e + f*x)**m/(f*m**2 + 2*f*m) + 2*b**m*csc(e + f*x)**m/(f*m**2 + 2*
f*m), True))
```

3.378 $\int \cot^5(e+fx)(b\csc(e+fx))^m\,dx$

Optimal. Leaf size=69

$$-\frac{(b\csc(e+fx))^{m+4}}{b^4f(m+4)}+\frac{2(b\csc(e+fx))^{m+2}}{b^2f(m+2)}-\frac{(b\csc(e+fx))^m}{fm}$$

```
[Out] -(b*csc(f*x+e))^m/f/m+2*(b*csc(f*x+e))^(2+m)/b^2/f/(2+m)-(b*csc(f*x+e))^(4+
m)/b^4/f/(4+m)
```

Rubi [A] time = 0.06, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2606, 270}

$$\frac{2(b\csc(e+fx))^{m+2}}{b^2f(m+2)}-\frac{(b\csc(e+fx))^{m+4}}{b^4f(m+4)}-\frac{(b\csc(e+fx))^m}{fm}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^5*(b*Csc[e + f*x])^m,x]
```

```
[Out] -((b*Csc[e + f*x])^m/(f*m)) + (2*(b*Csc[e + f*x])^(2 + m))/(b^2*f*(2 + m))
- (b*Csc[e + f*x])^(4 + m)/(b^4*f*(4 + m))
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2606

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_.), x_Symbol] :> Dist[a/f, Subst[Int[(a*x)^(m - 1)*(-1 + x^2)^((n - 1)/2)
, x], x, Sec[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n - 1)/2]
 &&  !(IntegerQ[m/2] && LtQ[0, m, n + 1])
```

Rubi steps

$$\int \cot^5(e+fx)(b\csc(e+fx))^m\,dx = -\frac{b\,\text{Subst}\left(\int (bx)^{-1+m}\left(-1+x^2\right)^2\,dx, x, \csc(e+fx)\right)}{f}$$
$$= -\frac{b\,\text{Subst}\left(\int \left((bx)^{-1+m} - \frac{2(bx)^{1+m}}{b^2} + \frac{(bx)^{3+m}}{b^4}\right)\,dx, x, \csc(e+fx)\right)}{f}$$
$$= -\frac{(b\csc(e+fx))^m}{fm} + \frac{2(b\csc(e+fx))^{2+m}}{b^2f(2+m)} - \frac{(b\csc(e+fx))^{4+m}}{b^4f(4+m)}$$

Mathematica [A] time = 0.30, size = 63, normalized size = 0.91

$$-\frac{\left(m(m+2)\csc^4(e+fx) - 2m(m+4)\csc^2(e+fx) + m^2 + 6m + 8\right)(b\csc(e+fx))^m}{fm(m+2)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^5*(b*Csc[e + f*x])^m,x]
```

```
[Out] -(((b*Csc[e + f*x])^m*(8 + 6*m + m^2 - 2*m*(4 + m)*Csc[e + f*x]^2 + m*(2 +
m)*Csc[e + f*x]^4))/(f*m*(2 + m)*(4 + m)))
```

fricas [A] time = 0.53, size = 115, normalized size = 1.67

$$-\frac{\left(\left(m^2+6\,m+8\right)\cos\left(fx+e\right)^4 - 4\,(m+4)\cos\left(fx+e\right)^2 + 8\right)\left(\frac{b}{\sin\left(fx+e\right)}\right)^m}{\left(fm^3+6\,fm^2+8\,fm\right)\cos\left(fx+e\right)^4 + fm^3 + 6\,fm^2 - 2\left(fm^3+6\,fm^2+8\,fm\right)\cos\left(fx+e\right)^2 + 8\,fm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^5*(b*csc(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] -((m^2 + 6*m + 8)*cos(f*x + e)^4 - 4*(m + 4)*cos(f*x + e)^2 + 8)*(b/sin(f*x
 + e))^m/((f*m^3 + 6*f*m^2 + 8*f*m)*cos(f*x + e)^4 + f*m^3 + 6*f*m^2 - 2*(f
*m^3 + 6*f*m^2 + 8*f*m)*cos(f*x + e)^2 + 8*f*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^m \cot\left(fx+e\right)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(cot(f*x+e)^5*(b*csc(f*x+e))^m,x, algorithm="giac")

[Out] integrate((b*csc(f*x + e))^m*cot(f*x + e)^5, x)

maple [C] time = 1.13, size = 16599, normalized size = 240.57

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(cot(f*x+e)^5*(b*csc(f*x+e))^m,x)

[Out] result too large to display

maxima [A] time = 0.70, size = 78, normalized size = 1.13

$$-\frac{\frac{b^m \sin\left(fx+e\right)^{-m}}{m} - \frac{2\,b^m \sin\left(fx+e\right)^{-m}}{(m+2)\sin\left(fx+e\right)^2} + \frac{b^m \sin\left(fx+e\right)^{-m}}{(m+4)\sin\left(fx+e\right)^4}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(cot(f*x+e)^5*(b*csc(f*x+e))^m,x, algorithm="maxima")

[Out] -(b^m*sin(f*x + e)^(-m)/m - 2*b^m*sin(f*x + e)^(-m)/((m + 2)*sin(f*x + e)^2
) + b^m*sin(f*x + e)^(-m)/((m + 4)*sin(f*x + e)^4))/f

mupad [B] time = 7.63, size = 222, normalized size = 3.22

$$-\frac{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)^m \left(2\sin\left(2\,e+2\,f\,x\right)^2+\sin\left(4\,e+4\,f\,x\right)\,1\mathrm{i}-1\right)\left(\frac{2\left(2\sin\left(2\,e+2\,f\,x\right)^2-1\right)\left(-2\sin\left(2\,e+2\,f\,x\right)^2+\sin\left(4\,e+4\,f\,x\right)\,1\mathrm{i}+1\right)}{f\,m} - \right.}{16\sin\left(e+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(cot(e + f*x)^5*(b/sin(e + f*x))^m,x)

[Out] -((b/sin(e + f*x))^m*(sin(4*e + 4*f*x)*1i + 2*sin(2*e + 2*f*x)^2 - 1)*((2*(
2*sin(2*e + 2*f*x)^2 - 1)*(sin(4*e + 4*f*x)*1i - 2*sin(2*e + 2*f*x)^2 + 1))
/(f*m) - ((sin(4*e + 4*f*x)*1i - 2*sin(2*e + 2*f*x)^2 + 1)*(4*m + 6*m^2 + 4
8))/(f*m*(6*m + m^2 + 8)) + (2*(2*sin(e + f*x)^2 - 1)*(sin(4*e + 4*f*x)*1i
- 2*sin(2*e + 2*f*x)^2 + 1)*(8*m + 4*m^2 - 32))/(f*m*(6*m + m^2 + 8))))/(16
*sin(e + f*x)^4)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**5*(b*csc(f*x+e))**m,x)
```

```
[Out] Timed out
```

3.379 $\int (b\csc(e+fx))^m \tan^4(e+fx)\,dx$

Optimal. Leaf size=63

$$\frac{\tan^3(e+fx)\sin^2(e+fx)^{\frac{m-3}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(-\frac{3}{2},\frac{m-3}{2};-\frac{1}{2};\cos^2(e+fx)\right)}{3f}$$

```
[Out] 1/3*(b*csc(f*x+e))^m*hypergeom([-3/2, -3/2+1/2*m],[-1/2],cos(f*x+e)^2)*(sin
(f*x+e)^2)^(-3/2+1/2*m)*tan(f*x+e)^3/f
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$\frac{\tan^3(e+fx)\sin^2(e+fx)^{\frac{m-3}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(-\frac{3}{2},\frac{m-3}{2};-\frac{1}{2};\cos^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Csc[e + f*x])^m*Tan[e + f*x]^4,x]
```

```
[Out] ((b*Csc[e + f*x])^m*Hypergeometric2F1[-3/2, (-3 + m)/2, -1/2, Cos[e + f*x]^
2]*(Sin[e + f*x]^2)^((-3 + m)/2)*Tan[e + f*x]^3)/(3*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (b\csc(e+fx))^m\tan^4(e+fx)\,dx = \frac{(b\csc(e+fx))^m\,{}_2F_1\left(-\frac{3}{2},\frac{1}{2}(-3+m);-\frac{1}{2};\cos^2(e+fx)\right)\sin^2(e+fx)^{\frac{1}{2}(-3+m)}}{3f}$$

Mathematica [B] time = 1.38, size = 212, normalized size = 3.37

$$-\frac{\tan(e+fx)\sec^2(e+fx)^{-m/2}(b\csc(e+fx))^m\left(\sqrt{\sin^2(e+fx)}\,{}_2F_1\left(\frac{1-m}{2},-\frac{m}{2}-1;\frac{3-m}{2};-\tan^2(e+fx)\right)-2\sqrt{\sin^2(}\right.}{f(n}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m*Tan[e + f*x]^4,x]
```

```
[Out] -(((b*Csc[e + f*x])^m*(Hypergeometric2F1[(1 - m)/2, -1 - m/2, (3 - m)/2, -T
an[e + f*x]^2]*Sqrt[Sin[e + f*x]^2] - 2*Hypergeometric2F1[(1 - m)/2, -1/2*m
, (3 - m)/2, -Tan[e + f*x]^2]*Sqrt[Sin[e + f*x]^2] + (-1 + m)*Cos[e + f*x]^
2*Hypergeometric2F1[1/2, (1 + m)/2, 3/2, Cos[e + f*x]^2]*(Sec[e + f*x]^2)^(
m/2)*(Sin[e + f*x]^2)^(m/2))*Tan[e + f*x])/(f*(-1 + m)*(Sec[e + f*x]^2)^(m/
2)*Sqrt[Sin[e + f*x]^2]))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\csc\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^4,x, algorithm="fricas")
```

```
[Out] integral((b*csc(f*x + e))^m*tan(f*x + e)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^4,x, algorithm="giac")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e)^4, x)
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\left(\tan^{4}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m*tan(f*x+e)^4,x)
```

```
[Out] int((b*csc(f*x+e))^m*tan(f*x+e)^4,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^4,x, algorithm="maxima")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^4\,{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^4*(b/sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)^4*(b/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \csc{\left(e + f x \right)}\right)^{m} \tan^{4}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m*tan(f*x+e)**4,x)
```

```
[Out] Integral((b*csc(e + f*x))**m*tan(e + f*x)**4, x)
```

3.380 $\int (b\csc(e+fx))^m \tan^2(e+fx)\,dx$

Optimal. Leaf size=58

$$\frac{\tan(e+fx)\sin^2(e+fx)^{\frac{m-1}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(-\frac{1}{2},\frac{m-1}{2};\frac{1}{2};\cos^2(e+fx)\right)}{f}$$

[Out] (b*csc(f*x+e))^m*hypergeom([-1/2, -1/2+1/2*m],[1/2],cos(f*x+e)^2)*(sin(f*x+e)^2)^(-1/2+1/2*m)*tan(f*x+e)/f

Rubi [A] time = 0.04, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$\frac{\tan(e+fx)\sin^2(e+fx)^{\frac{m-1}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(-\frac{1}{2},\frac{m-1}{2};\frac{1}{2};\cos^2(e+fx)\right)}{f}$$

Antiderivative was successfully verified.

[In] Int[(b*Csc[e + f*x])^m*Tan[e + f*x]^2,x]

[Out] ((b*Csc[e + f*x])^m*Hypergeometric2F1[-1/2, (-1 + m)/2, 1/2, Cos[e + f*x]^2]*(Sin[e + f*x]^2)^((-1 + m)/2)*Tan[e + f*x])/f

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int (b\csc(e+fx))^m \tan^2(e+fx)\,dx = \frac{(b\csc(e+fx))^m\,{}_2F_1\left(-\frac{1}{2},\frac{1}{2}(-1+m);\frac{1}{2};\cos^2(e+fx)\right)\sin^2(e+fx)^{\frac{1}{2}(-1+m)}}{f}$$

Mathematica [A] time = 0.63, size = 79, normalized size = 1.36

$$\frac{\tan^3(e+fx)\sec^2(e+fx)^{-m/2}(b\csc(e+fx))^m\,{}_2F_1\left(1-\frac{m}{2},\frac{3}{2}-\frac{m}{2};\frac{5}{2}-\frac{m}{2};-\tan^2(e+fx)\right)}{f(3-m)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m*Tan[e + f*x]^2,x]
```

```
[Out] ((b*Csc[e + f*x])^m*Hypergeometric2F1[1 - m/2, 3/2 - m/2, 5/2 - m/2, -Tan[e
 + f*x]^2]*Tan[e + f*x]^3)/(f*(3 - m)*(Sec[e + f*x]^2)^(m/2))
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\csc\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral((b*csc(f*x + e))^m*tan(f*x + e)^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^2,x, algorithm="giac")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e)^2, x)
```

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\left(\tan^{2}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m*tan(f*x+e)^2,x)
```

```
[Out] int((b*csc(f*x+e))^m*tan(f*x+e)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\tan\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*tan(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] integrate((b*csc(f*x + e))^m*tan(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \tan\left(e+f\,x\right)^2\,{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(tan(e + f*x)^2*(b/sin(e + f*x))^m,x)
```

```
[Out] int(tan(e + f*x)^2*(b/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \csc{\left(e + f x \right)}\right)^{m} \tan^{2}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m*tan(f*x+e)**2,x)
```

```
[Out] Integral((b*csc(e + f*x))**m*tan(e + f*x)**2, x)
```

3.381 $\int \cot^2(e+fx)(b\csc(e+fx))^m\,dx$

Optimal. Leaf size=63

$$-\frac{\cot^3(e+fx)\sin^2(e+fx)^{\frac{m+3}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{3}{2},\frac{m+3}{2};\frac{5}{2};\cos^2(e+fx)\right)}{3f}$$

```
[Out] -1/3*cot(f*x+e)^3*(b*csc(f*x+e))^m*hypergeom([3/2, 3/2+1/2*m],[5/2],cos(f*x
+e)^2)*(sin(f*x+e)^2)^(3/2+1/2*m)/f
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$-\frac{\cot^3(e+fx)\sin^2(e+fx)^{\frac{m+3}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{3}{2},\frac{m+3}{2};\frac{5}{2};\cos^2(e+fx)\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^2*(b*Csc[e + f*x])^m,x]
```

```
[Out] -(Cot[e + f*x]^3*(b*Csc[e + f*x])^m*Hypergeometric2F1[3/2, (3 + m)/2, 5/2,
Cos[e + f*x]^2]*(Sin[e + f*x]^2)^((3 + m)/2))/(3*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
  !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \cot^2(e+fx)(b\csc(e+fx))^m\,dx = -\frac{\cot^3(e+fx)(b\csc(e+fx))^m\,{}_2F_1\left(\frac{3}{2},\frac{3+m}{2};\frac{5}{2};\cos^2(e+fx)\right)\sin^2(e+fx)^{\frac{3+m}{2}}}{3f}$$

Mathematica [B] time = 1.19, size = 186, normalized size = 2.95

$$-\frac{\tan\left(\frac{1}{2}(e+fx)\right)\sec^2\left(\frac{1}{2}(e+fx)\right)^{-m}(b\csc(e+fx))^m\left(-4(m+1)\,{}_2F_1\left(1-m,\frac{1}{2}-\frac{m}{2};\frac{3}{2}-\frac{m}{2};-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^2*(b*Csc[e + f*x])^m,x]
```

```
[Out] -1/2*((b*Csc[e + f*x])^m*(-4*(1 + m)*Hypergeometric2F1[1 - m, 1/2 - m/2, 3/
2 - m/2, -Tan[(e + f*x)/2]^2] + (-1 + m)*Cot[(e + f*x)/2]^2*Hypergeometric2
F1[-1/2 - m/2, -m, 1/2 - m/2, -Tan[(e + f*x)/2]^2] + (1 + m)*Hypergeometric
2F1[1/2 - m/2, -m, 3/2 - m/2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2])/(f*(-
1 + m^2)*(Sec[(e + f*x)/2]^2)^m)
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\csc\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(b*csc(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] integral((b*csc(f*x + e))^m*cot(f*x + e)^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(b*csc(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((b*csc(f*x + e))^m*cot(f*x + e)^2, x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \left(\cot^{2}\left(fx+e\right)\right)\left(b\csc\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^2*(b*csc(f*x+e))^m,x)
```

```
[Out] int(cot(f*x+e)^2*(b*csc(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^2*(b*csc(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] integrate((b*csc(f*x + e))^m*cot(f*x + e)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cot\left(e+f\,x\right)^2\,{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^2*(b/sin(e + f*x))^m,x)
```

```
[Out] int(cot(e + f*x)^2*(b/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \csc{\left(e + f x \right)}\right)^{m} \cot^{2}{\left(e + f x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**2*(b*csc(f*x+e))**m,x)
```

```
[Out] Integral((b*csc(e + f*x))**m*cot(e + f*x)**2, x)
```

3.382 $\int \cot^4(e+fx)(b\csc(e+fx))^m\,dx$

Optimal. Leaf size=63

$$-\frac{\cot^5(e+fx)\sin^2(e+fx)^{\frac{m+5}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{5}{2},\frac{m+5}{2};\frac{7}{2};\cos^2(e+fx)\right)}{5f}$$

```
[Out] -1/5*cot(f*x+e)^5*(b*csc(f*x+e))^m*hypergeom([5/2, 5/2+1/2*m],[7/2],cos(f*x
+e)^2)*(sin(f*x+e)^2)^(5/2+1/2*m)/f
```

Rubi [A] time = 0.04, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2617}

$$-\frac{\cot^5(e+fx)\sin^2(e+fx)^{\frac{m+5}{2}}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{5}{2},\frac{m+5}{2};\frac{7}{2};\cos^2(e+fx)\right)}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[Cot[e + f*x]^4*(b*Csc[e + f*x])^m,x]
```

```
[Out] -(Cot[e + f*x]^5*(b*Csc[e + f*x])^m*Hypergeometric2F1[5/2, (5 + m)/2, 7/2,
Cos[e + f*x]^2]*(Sin[e + f*x]^2)^((5 + m)/2))/(5*f)
```

Rule 2617

```
Int[((a_.)*sec[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Simp[((a*Sec[e + f*x])^m*(b*Tan[e + f*x])^(n + 1)*(Cos[e
+ f*x]^2)^((m + n + 1)/2)*Hypergeometric2F1[(n + 1)/2, (m + n + 1)/2, (n +
3)/2, Sin[e + f*x]^2])/(b*f*(n + 1)), x] /; FreeQ[{a, b, e, f, m, n}, x] &&
 !IntegerQ[(n - 1)/2] &&  !IntegerQ[m/2]
```

Rubi steps

$$\int \cot^4(e+fx)(b\csc(e+fx))^m\,dx=-\frac{\cot^5(e+fx)(b\csc(e+fx))^m\,{}_2F_1\left(\frac{5}{2},\frac{5+m}{2};\frac{7}{2};\cos^2(e+fx)\right)\sin^2(e+fx)^{\frac{5+}{2}}}{5f}$$

Mathematica [A] time = 0.26, size = 106, normalized size = 1.68

$$-\frac{\cot(e+fx)\sin^2(e+fx)^{\frac{m+1}{2}}(b\csc(e+fx))^m\left({}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{3}{2};\cos^2(e+fx)\right)-2\,{}_2F_1\left(\frac{1}{2},\frac{m+3}{2};\frac{3}{2};\cos^2(e+fx)\right)+\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cot[e + f*x]^4*(b*Csc[e + f*x])^m,x]
```

```
[Out] -((Cot[e + f*x]*(b*Csc[e + f*x])^m*(Hypergeometric2F1[1/2, (1 + m)/2, 3/2,
Cos[e + f*x]^2] - 2*Hypergeometric2F1[1/2, (3 + m)/2, 3/2, Cos[e + f*x]^2]
+ Hypergeometric2F1[1/2, (5 + m)/2, 3/2, Cos[e + f*x]^2])*(Sin[e + f*x]^2)^
((1 + m)/2))/f)
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b\csc\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(b*csc(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] integral((b*csc(f*x + e))^m*cot(f*x + e)^4, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(b*csc(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate((b*csc(f*x + e))^m*cot(f*x + e)^4, x)
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int\left(\cot^{4}\left(fx+e\right)\right)\left(b\csc\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(f*x+e)^4*(b*csc(f*x+e))^m,x)
```

```
[Out] int(cot(f*x+e)^4*(b*csc(f*x+e))^m,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\csc\left(fx+e\right)\right)^{m}\cot\left(fx+e\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)^4*(b*csc(f*x+e))^m,x, algorithm="maxima")
```

```
[Out] integrate((b*csc(f*x + e))^m*cot(f*x + e)^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \cot\left(e+f\,x\right)^4\,\left(\frac{b}{\sin\left(e+f\,x\right)}\right)^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cot(e + f*x)^4*(b/sin(e + f*x))^m,x)
[Out] int(cot(e + f*x)^4*(b/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \csc\left(e+fx\right)\right)^{m} \cot^{4}\left(e+fx\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cot(f*x+e)**4*(b*csc(f*x+e))**m,x)
[Out] Integral((b*csc(e + f*x))**m*cot(e + f*x)**4, x)
```

3.383 $\int (b\csc(e+fx))^m (d\tan(e+fx))^{3/2}\,dx$

Optimal. Leaf size=79

$$\frac{2\cos^2(e+fx)^{5/4}(d\tan(e+fx))^{5/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{5}{4},\frac{1}{4}(5-2m);\frac{1}{4}(9-2m);\sin^2(e+fx)\right)}{df(5-2m)}$$

```
[Out] 2*(cos(f*x+e)^2)^(5/4)*(b*csc(f*x+e))^m*hypergeom([5/4, 5/4-1/2*m],[9/4-1/2
*m],sin(f*x+e)^2)*(d*tan(f*x+e))^(5/2)/d/f/(5-2*m)
```

Rubi [A] time = 0.17, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {2618, 2602, 2577}

$$\frac{2\cos^2(e+fx)^{5/4}(d\tan(e+fx))^{5/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{5}{4},\frac{1}{4}(5-2m);\frac{1}{4}(9-2m);\sin^2(e+fx)\right)}{df(5-2m)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Csc[e + f*x])^m*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(5/4)*(b*Csc[e + f*x])^m*Hypergeometric2F1[5/4, (5 - 2*
m)/4, (9 - 2*m)/4, Sin[e + f*x]^2]*(d*Tan[e + f*x])^(5/2))/(d*f*(5 - 2*m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rule 2618

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Csc[e + f*x])^FracPart[m]*(Sin[e + f*x]/a)^FracPar
t[m], Int[(b*Tan[e + f*x])^n/(Sin[e + f*x]/a)^m, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] && !IntegerQ[m] && !IntegerQ[n]
```

Rubi steps

$$\int (b\csc(e+fx))^m(d\tan(e+fx))^{3/2}\,dx = \left((b\csc(e+fx))^m\left(\frac{\sin(e+fx)}{b}\right)^m\right)\int\left(\frac{\sin(e+fx)}{b}\right)^{-m}(d\tan(e+fx))$$

$$= \frac{\left(\cos^{\frac{5}{2}}(e+fx)(b\csc(e+fx))^{3+m}\left(\frac{\sin(e+fx)}{b}\right)^{\frac{1}{2}+m}(d\tan(e+fx))^{5/2}\right)\int}{bd}$$

$$= \frac{2\cos^2(e+fx)^{5/4}(b\csc(e+fx))^{3+m}\,{}_2F_1\left(\frac{5}{4},\frac{1}{4}(5-2m);\frac{1}{4}(9-2m);\sin^2\right.}{b^3df(5-2m)}$$

Mathematica [A] time = 5.58, size = 87, normalized size = 1.10

$$-\frac{2(d\tan(e+fx))^{5/2}\sec^2(e+fx)^{-m/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{1}{4}(5-2m),1-\frac{m}{2};\frac{1}{4}(9-2m);-\tan^2(e+fx)\right)}{df(2m-5)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m*(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*(b*Csc[e + f*x])^m*Hypergeometric2F1[(5 - 2*m)/4, 1 - m/2, (9 - 2*m)/4,
 -Tan[e + f*x]^2]*(d*Tan[e + f*x])^(5/2))/(d*f*(-5 + 2*m)*(Sec[e + f*x]^2)^
(m/2))
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(fx+e\right)}\,\left(b\csc\left(fx+e\right)\right)^m d\tan\left(fx+e\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*(d*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*(b*csc(f*x + e))^m*d*tan(f*x + e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\csc\left(fx+e\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*(d*tan(f*x+e))^(3/2),x, algorithm="giac")
[Out] integrate((d*tan(f*x + e))^(3/2)*(b*csc(f*x + e))^m, x)
```

maple [F] time = 0.55, size = 0, normalized size = 0.00

$$\int \left(b\csc\left(fx+e\right)\right)^{m}\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m*(d*tan(f*x+e))^(3/2),x)
[Out] int((b*csc(f*x+e))^m*(d*tan(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}\left(b\csc\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*(d*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((d*tan(f*x + e))^(3/2)*(b*csc(f*x + e))^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(d\,\tan\left(e+f\,x\right)\right)}^{3/2}\,{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(3/2)*(b/sin(e + f*x))^m,x)
[Out] int((d*tan(e + f*x))^(3/2)*(b/sin(e + f*x))^m, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m*(d*tan(f*x+e))**(3/2),x)
[Out] Timed out
```

3.384 $\int (b\csc(e+fx))^m\sqrt{d\tan(e+fx)}\,dx$

Optimal. Leaf size=79

$$\frac{2\cos^2(e+fx)^{3/4}(d\tan(e+fx))^{3/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{3}{4},\frac{1}{4}(3-2m);\frac{1}{4}(7-2m);\sin^2(e+fx)\right)}{df(3-2m)}$$

```
[Out] 2*(cos(f*x+e)^2)^(3/4)*(b*csc(f*x+e))^m*hypergeom([3/4, 3/4-1/2*m],[7/4-1/2
*m],sin(f*x+e)^2)*(d*tan(f*x+e))^(3/2)/d/f/(3-2*m)
```

Rubi [A] time = 0.15, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {2618, 2602, 2577}

$$\frac{2\cos^2(e+fx)^{3/4}(d\tan(e+fx))^{3/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{3}{4},\frac{1}{4}(3-2m);\frac{1}{4}(7-2m);\sin^2(e+fx)\right)}{df(3-2m)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Csc[e + f*x])^m*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(3/4)*(b*Csc[e + f*x])^m*Hypergeometric2F1[3/4, (3 - 2*
m)/4, (7 - 2*m)/4, Sin[e + f*x]^2]*(d*Tan[e + f*x])^(3/2))/(d*f*(3 - 2*m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rule 2618

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Csc[e + f*x])^FracPart[m]*(Sin[e + f*x]/a)^FracPar
t[m], Int[(b*Tan[e + f*x])^n/(Sin[e + f*x]/a)^m, x], x] /; FreeQ[{a, b, e,
```

```
f, m, n}, x] && !IntegerQ[m] && !IntegerQ[n]
```

Rubi steps

$$\int (b\csc(e+fx))^m\sqrt{d\tan(e+fx)}\,dx = \left((b\csc(e+fx))^m\left(\frac{\sin(e+fx)}{b}\right)^m\right)\int\left(\frac{\sin(e+fx)}{b}\right)^{-m}\sqrt{d\tan(e+fx)}\,dx$$

$$= \frac{\left(\cos^{\frac{3}{2}}(e+fx)(b\csc(e+fx))^{2+m}\left(\frac{\sin(e+fx)}{b}\right)^{\frac{1}{2}+m}(d\tan(e+fx))^{3/2}\right)\int\frac{\left(\frac{\sin(e}{b}\right.}{\sqrt{\cos}}}{bd}$$

$$= \frac{2\cos^2(e+fx)^{3/4}(b\csc(e+fx))^{2+m}\,{}_2F_1\left(\frac{3}{4},\frac{1}{4}(3-2m);\frac{1}{4}(7-2m);\sin^2(e\right.}{b^2df(3-2m)}$$

Mathematica [A] time = 3.20, size = 87, normalized size = 1.10

$$-\frac{2(d\tan(e+fx))^{3/2}\sec^2(e+fx)^{-m/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{1}{4}(3-2m),1-\frac{m}{2};\frac{1}{4}(7-2m);-\tan^2(e+fx)\right)}{df(2m-3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m*Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (-2*(b*Csc[e + f*x])^m*Hypergeometric2F1[(3 - 2*m)/4, 1 - m/2, (7 - 2*m)/4,
 -Tan[e + f*x]^2]*(d*Tan[e + f*x])^(3/2))/(d*f*(-3 + 2*m)*(Sec[e + f*x]^2)^
(m/2))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{d\tan\left(fx+e\right)}\left(b\csc\left(fx+e\right)\right)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*(b*csc(f*x + e))^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{d\tan\left(fx+e\right)}\left(b\csc\left(fx+e\right)\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*(d*tan(f*x+e))^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(d*tan(f*x + e))*(b*csc(f*x + e))^m, x)
```

maple [F] time = 0.57, size = 0, normalized size = 0.00

$$\int \left(b \csc \left(f x+e\right)\right)^{m} \sqrt{d \tan \left(f x+e\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m*(d*tan(f*x+e))^(1/2),x)
[Out] int((b*csc(f*x+e))^m*(d*tan(f*x+e))^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d \tan \left(f x+e\right)} \left(b \csc \left(f x+e\right)\right)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m*(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(d*tan(f*x + e))*(b*csc(f*x + e))^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{d \tan \left(e+f\,x\right)}\,{\left(\frac{b}{\sin \left(e+f\,x\right)}\right)}^m \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*tan(e + f*x))^(1/2)*(b/sin(e + f*x))^m,x)
[Out] int((d*tan(e + f*x))^(1/2)*(b/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \csc \left(e + f x\right)\right)^{m} \sqrt{d \tan \left(e + f x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m*(d*tan(f*x+e))**(1/2),x)
[Out] Integral((b*csc(e + f*x))**m*sqrt(d*tan(e + f*x)), x)
```

3.385 $\int \frac{(b\csc(e+fx))^m}{\sqrt{d\tan(e+fx)}}\,dx$

Optimal. Leaf size=79

$$\frac{2\sqrt[4]{\cos^2(e+fx)}\,\sqrt{d\tan(e+fx)}\,(b\csc(e+fx))^m\,{}_2F_1\left(\frac{1}{4},\frac{1}{4}(1-2m);\frac{1}{4}(5-2m);\sin^2(e+fx)\right)}{df(1-2m)}$$

```
[Out] 2*(cos(f*x+e)^2)^(1/4)*(b*csc(f*x+e))^m*hypergeom([1/4, 1/4-1/2*m],[5/4-1/2
*m],sin(f*x+e)^2)*(d*tan(f*x+e))^(1/2)/d/f/(1-2*m)
```

Rubi [A] time = 0.15, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {2618, 2602, 2577}

$$\frac{2\sqrt[4]{\cos^2(e+fx)}\,\sqrt{d\tan(e+fx)}\,(b\csc(e+fx))^m\,{}_2F_1\left(\frac{1}{4},\frac{1}{4}(1-2m);\frac{1}{4}(5-2m);\sin^2(e+fx)\right)}{df(1-2m)}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Csc[e + f*x])^m/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (2*(Cos[e + f*x]^2)^(1/4)*(b*Csc[e + f*x])^m*Hypergeometric2F1[1/4, (1 - 2*
m)/4, (5 - 2*m)/4, Sin[e + f*x]^2]*Sqrt[d*Tan[e + f*x]])/(d*f*(1 - 2*m))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rule 2618

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Csc[e + f*x])^FracPart[m]*(Sin[e + f*x]/a)^FracPar
```

```
t[m], Int[(b*Tan[e + f*x])^n/(Sin[e + f*x]/a)^m, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] && !IntegerQ[m] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{(b\csc(e+fx))^m}{\sqrt{d\tan(e+fx)}}\,dx = \left((b\csc(e+fx))^m\left(\frac{\sin(e+fx)}{b}\right)^m\right)\int \frac{\left(\frac{\sin(e+fx)}{b}\right)^{-m}}{\sqrt{d\tan(e+fx)}}\,dx$$

$$= \frac{\left(\sqrt{\cos(e+fx)}\,(b\csc(e+fx))^{1+m}\left(\frac{\sin(e+fx)}{b}\right)^{\frac{1}{2}+m}\sqrt{d\tan(e+fx)}\right)\int \sqrt{\cos(e+fx)}\,\left(\frac{\sin}{\right.}}{bd}$$

$$= \frac{2\sqrt[4]{\cos^2(e+fx)}\,(b\csc(e+fx))^{1+m}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4}(1-2m);\frac{1}{4}(5-2m);\sin^2(e+fx)\right)\sin(e+}{bdf(1-2m)}$$

Mathematica [A] time = 1.26, size = 87, normalized size = 1.10

$$-\frac{2\sqrt{d\tan(e+fx)}\,\sec^2(e+fx)^{-m/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{1}{4}(1-2m),1-\frac{m}{2};\frac{1}{4}(5-2m);-\tan^2(e+fx)\right)}{df(2m-1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m/Sqrt[d*Tan[e + f*x]],x]
```

```
[Out] (-2*(b*Csc[e + f*x])^m*Hypergeometric2F1[(1 - 2*m)/4, 1 - m/2, (5 - 2*m)/4,
 -Tan[e + f*x]^2]*Sqrt[d*Tan[e + f*x]])/(d*f*(-1 + 2*m)*(Sec[e + f*x]^2)^(m
/2))
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(fx+e\right)}\,\left(b\csc\left(fx+e\right)\right)^m}{d\tan\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m/(d*tan(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*(b*csc(f*x + e))^m/(d*tan(f*x + e)), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(fx+e\right)\right)^{m}}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m/(d*tan(f*x+e))^(1/2),x, algorithm="giac")
[Out] integrate((b*csc(f*x + e))^m/sqrt(d*tan(f*x + e)), x)
```

maple [F] time = 0.54, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(fx+e\right)\right)^{m}}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m/(d*tan(f*x+e))^(1/2),x)
[Out] int((b*csc(f*x+e))^m/(d*tan(f*x+e))^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(fx+e\right)\right)^{m}}{\sqrt{d\tan\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m/(d*tan(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((b*csc(f*x + e))^m/sqrt(d*tan(f*x + e)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)^{m}}{\sqrt{d\tan\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b/sin(e + f*x))^m/(d*tan(e + f*x))^(1/2),x)
```

```
[Out] int((b/sin(e + f*x))^m/(d*tan(e + f*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(e+fx\right)\right)^{m}}{\sqrt{d\tan\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m/(d*tan(f*x+e))**(1/2),x)
[Out] Integral((b*csc(e + f*x))**m/sqrt(d*tan(e + f*x)), x)
```

3.386 $\int \frac{(b\csc(e+fx))^m}{(d\tan(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{2(b\csc(e+fx))^m\, {}_2F_1\left(-\frac{1}{4},\frac{1}{4}(-2m-1);\frac{1}{4}(3-2m);\sin^2(e+fx)\right)}{df(2m+1)\sqrt[4]{\cos^2(e+fx)}\,\sqrt{d\tan(e+fx)}}$$

```
[Out] -2*(b*csc(f*x+e))^m*hypergeom([-1/4, -1/4-1/2*m],[3/4-1/2*m],sin(f*x+e)^2)/
d/f/(1+2*m)/(cos(f*x+e)^2)^(1/4)/(d*tan(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {2618, 2602, 2577}

$$-\frac{2(b\csc(e+fx))^m\, {}_2F_1\left(-\frac{1}{4},\frac{1}{4}(-2m-1);\frac{1}{4}(3-2m);\sin^2(e+fx)\right)}{df(2m+1)\sqrt[4]{\cos^2(e+fx)}\,\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b*Csc[e + f*x])^m/(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*(b*Csc[e + f*x])^m*Hypergeometric2F1[-1/4, (-1 - 2*m)/4, (3 - 2*m)/4, S
in[e + f*x]^2])/(d*f*(1 + 2*m)*(Cos[e + f*x]^2)^(1/4)*Sqrt[d*Tan[e + f*x]])
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rule 2618

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Csc[e + f*x])^FracPart[m]*(Sin[e + f*x]/a)^FracPar
```

```
t[m], Int[(b*Tan[e + f*x])^n/(Sin[e + f*x]/a)^m, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] && !IntegerQ[m] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{(b\csc(e+fx))^m}{(d\tan(e+fx))^{3/2}}\,dx = \left((b\csc(e+fx))^m\left(\frac{\sin(e+fx)}{b}\right)^m\right)\int \frac{\left(\frac{\sin(e+fx)}{b}\right)^{-m}}{(d\tan(e+fx))^{3/2}}\,dx$$

$$= \frac{\left((b\csc(e+fx))^m\left(\frac{\sin(e+fx)}{b}\right)^{\frac{1}{2}+m}\right)\int \cos^{\frac{3}{2}}(e+fx)\left(\frac{\sin(e+fx)}{b}\right)^{-\frac{3}{2}-m}\,dx}{bd\sqrt{\cos(e+fx)}\sqrt{d\tan(e+fx)}}$$

$$= -\frac{2(b\csc(e+fx))^m\,{}_2F_1\left(-\frac{1}{4},\frac{1}{4}(-1-2m);\frac{1}{4}(3-2m);\sin^2(e+fx)\right)}{df(1+2m)\sqrt[4]{\cos^2(e+fx)}\sqrt{d\tan(e+fx)}}$$

Mathematica [A] time = 3.58, size = 87, normalized size = 1.10

$$-\frac{2\sec^2(e+fx)^{-m/2}(b\csc(e+fx))^m\,{}_2F_1\left(\frac{1}{4}(-2m-1),1-\frac{m}{2};\frac{1}{4}(3-2m);-\tan^2(e+fx)\right)}{df(2m+1)\sqrt{d\tan(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b*Csc[e + f*x])^m/(d*Tan[e + f*x])^(3/2),x]
```

```
[Out] (-2*(b*Csc[e + f*x])^m*Hypergeometric2F1[(-1 - 2*m)/4, 1 - m/2, (3 - 2*m)/4
, -Tan[e + f*x]^2])/(d*f*(1 + 2*m)*(Sec[e + f*x]^2)^(m/2)*Sqrt[d*Tan[e + f*
x]])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\tan\left(fx+e\right)}\left(b\csc\left(fx+e\right)\right)^m}{d^2\tan\left(fx+e\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m/(d*tan(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*tan(f*x + e))*(b*csc(f*x + e))^m/(d^2*tan(f*x + e)^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(fx+e\right)\right)^{m}}{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m/(d*tan(f*x+e))^(3/2),x, algorithm="giac")
[Out] integrate((b*csc(f*x + e))^m/(d*tan(f*x + e))^(3/2), x)
```

maple [F] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(fx+e\right)\right)^{m}}{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*csc(f*x+e))^m/(d*tan(f*x+e))^(3/2),x)
[Out] int((b*csc(f*x+e))^m/(d*tan(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(fx+e\right)\right)^{m}}{\left(d\tan\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))^m/(d*tan(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((b*csc(f*x + e))^m/(d*tan(f*x + e))^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(\frac{b}{\sin\left(e+f\,x\right)}\right)^{m}}{\left(d\,\tan\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b/sin(e + f*x))^m/(d*tan(e + f*x))^(3/2),x)
```

```
[Out] int((b/sin(e + f*x))^m/(d*tan(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\csc\left(e+fx\right)\right)^{m}}{\left(d\tan\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*csc(f*x+e))**m/(d*tan(f*x+e))**(3/2),x)
```

```
[Out] Integral((b*csc(e + f*x))**m/(d*tan(e + f*x))**(3/2), x)
```

3.387 $\int (a\csc(e+fx))^m (b\tan(e+fx))^n\,dx$

Optimal. Leaf size=89

$$\frac{\cos^2(e+fx)^{\frac{n+1}{2}}(a\csc(e+fx))^m(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);\sin^2(e+fx)\right)}{bf(-m+n+1)}$$

```
[Out] (cos(f*x+e)^2)^(1/2+1/2*n)*(a*csc(f*x+e))^m*hypergeom([1/2+1/2*n, 1/2-1/2*m
+1/2*n],[3/2-1/2*m+1/2*n],sin(f*x+e)^2)*(b*tan(f*x+e))^(1+n)/b/f/(1-m+n)
```

Rubi [A] time = 0.15, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2618, 2602, 2577}

$$\frac{\cos^2(e+fx)^{\frac{n+1}{2}}(a\csc(e+fx))^m(b\tan(e+fx))^{n+1}\,{}_2F_1\left(\frac{n+1}{2},\frac{1}{2}(-m+n+1);\frac{1}{2}(-m+n+3);\sin^2(e+fx)\right)}{bf(-m+n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*Csc[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] ((Cos[e + f*x]^2)^((1 + n)/2)*(a*Csc[e + f*x])^m*Hypergeometric2F1[(1 + n)/
2, (1 - m + n)/2, (3 - m + n)/2, Sin[e + f*x]^2]*(b*Tan[e + f*x])^(1 + n))/
(b*f*(1 - m + n))
```

Rule 2577

```
Int[(cos[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((a_.)*sin[(e_.) + (f_.)*(x_)])^(m
_), x_Symbol] :> Simp[(b^(2*IntPart[(n - 1)/2] + 1)*(b*Cos[e + f*x])^(2*Fra
cPart[(n - 1)/2])*(a*Sin[e + f*x])^(m + 1)*Hypergeometric2F1[(1 + m)/2, (1
- n)/2, (3 + m)/2, Sin[e + f*x]^2])/(a*f*(m + 1)*(Cos[e + f*x]^2)^FracPart[
(n - 1)/2]), x] /; FreeQ[{a, b, e, f, m, n}, x]
```

Rule 2602

```
Int[((a_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(
n_), x_Symbol] :> Dist[(a*Cos[e + f*x]^(n + 1)*(b*Tan[e + f*x])^(n + 1))/(b
*(a*Sin[e + f*x])^(n + 1)), Int[(a*Sin[e + f*x])^(m + n)/Cos[e + f*x]^n, x]
, x] /; FreeQ[{a, b, e, f, m, n}, x] && !IntegerQ[n]
```

Rule 2618

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n
_), x_Symbol] :> Dist[(a*Csc[e + f*x])^FracPart[m]*(Sin[e + f*x]/a)^FracPar
```

```
t[m], Int[(b*Tan[e + f*x])^n/(Sin[e + f*x]/a)^m, x], x] /; FreeQ[{a, b, e,
f, m, n}, x] && !IntegerQ[m] && !IntegerQ[n]
```

Rubi steps

$$\int (a\csc(e+fx))^m (b\tan(e+fx))^n\,dx = \left((a\csc(e+fx))^m\left(\frac{\sin(e+fx)}{a}\right)^m\right)\int\left(\frac{\sin(e+fx)}{a}\right)^{-m}(b\tan(e+fx))^n$$

$$= \frac{\left(\cos^{1+n}(e+fx)(a\csc(e+fx))^{1+m}\left(\frac{\sin(e+fx)}{a}\right)^{m-n}(b\tan(e+fx))^{1+n}\right)\int}{ab}$$

$$= \frac{\cos^2(e+fx)^{\frac{1+n}{2}}(a\csc(e+fx))^{1+m}\,{}_2F_1\left(\frac{1+n}{2},\frac{1}{2}(1-m+n);\frac{1}{2}(3-m+n)\right.}{abf(1-m+n)}$$

Mathematica [C] time = 2.04, size = 287, normalized size = 3.22

$$-\frac{a(m-n-3)(a\csc}{f(m-n-1)\left((m-n-3)F_1\left(\frac{1}{2}(-m+n+1);n,1-m;\frac{1}{2}(-m+n+3);\tan^2\left(\frac{1}{2}(e+fx)\right),-\tan^2\left(\frac{1}{2}(e+fx)\right)\right)-\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a*Csc[e + f*x])^m*(b*Tan[e + f*x])^n,x]
```

```
[Out] -((a*(-3 + m - n)*AppellF1[(1 - m + n)/2, n, 1 - m, (3 - m + n)/2, Tan[(e +
 f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(a*Csc[e + f*x])^(-1 + m)*(b*Tan[e + f*x])
^n)/(f*(-1 + m - n)*((-3 + m - n)*AppellF1[(1 - m + n)/2, n, 1 - m, (3 - m
+ n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] - 2*((-1 + m)*AppellF1[(3
- m + n)/2, n, 2 - m, (5 - m + n)/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^
2] + n*AppellF1[(3 - m + n)/2, 1 + n, 1 - m, (5 - m + n)/2, Tan[(e + f*x)/2
]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2)))
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\csc\left(fx+e\right)\right)^m\left(b\tan\left(fx+e\right)\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*csc(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((a*csc(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a\csc\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*csc(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*csc(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

maple [F] time = 1.53, size = 0, normalized size = 0.00

$$\int \left(a\csc\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*csc(f*x+e))^m*(b*tan(f*x+e))^n,x)
[Out] int((a*csc(f*x+e))^m*(b*tan(f*x+e))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a\csc\left(fx+e\right)\right)^{m}\left(b\tan\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*csc(f*x+e))^m*(b*tan(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((a*csc(f*x + e))^m*(b*tan(f*x + e))^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(b\tan\left(e+f\,x\right)\right)^{n}\left(\frac{a}{\sin\left(e+f\,x\right)}\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*tan(e + f*x))^n*(a/sin(e + f*x))^m,x)
[Out] int((b*tan(e + f*x))^n*(a/sin(e + f*x))^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a\csc\left(e+fx\right)\right)^{m}\left(b\tan\left(e+fx\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*csc(f*x+e))**m*(b*tan(f*x+e))**n,x)
[Out] Integral((a*csc(e + f*x))**m*(b*tan(e + f*x))**n, x)
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
```

```
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
```

```
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
```

```
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do not
    as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
```

```
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
```

```
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:
```

```
#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)
   ))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type
   (expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
```

```
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,
   Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
```

```
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
    sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U
    ']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
    sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
    sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
```

```
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens"):
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer)
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
```

```
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn.
    func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
```

```
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
        else: #result contains complex but optimal is not
            return "C"
    else: # result do not contain complex, this assumes optimal do not as
well
        if leaf_count_result <= 2*leaf_count_optimal:
            return "A"
        else:
            return "B"
else:
    return "C"
```