Computer algebra independent integration tests

4-Trig-functions/4.5-Secant/4.5.2.1-a+b-sec-^m-c+d-sec-^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 [241]. This is test number [121].

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	% 99.59 (240)	% 0.41 (1)
Mathematica	% 94.19 (227)	% 5.81 (14)
Maple	% 89.63 (216)	% 10.37 (25)
Maxima	% 39.83 (96)	% 60.17 (145)
Fricas	% 60.17 (145)	% 39.83 (96)
Sympy	% 2.07 (5)	% 97.93 (236)
Giac	% 18.26 (44)	% 81.74 (197)
Mupad	% 23.24 (56)	% 76.76 (185)

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.

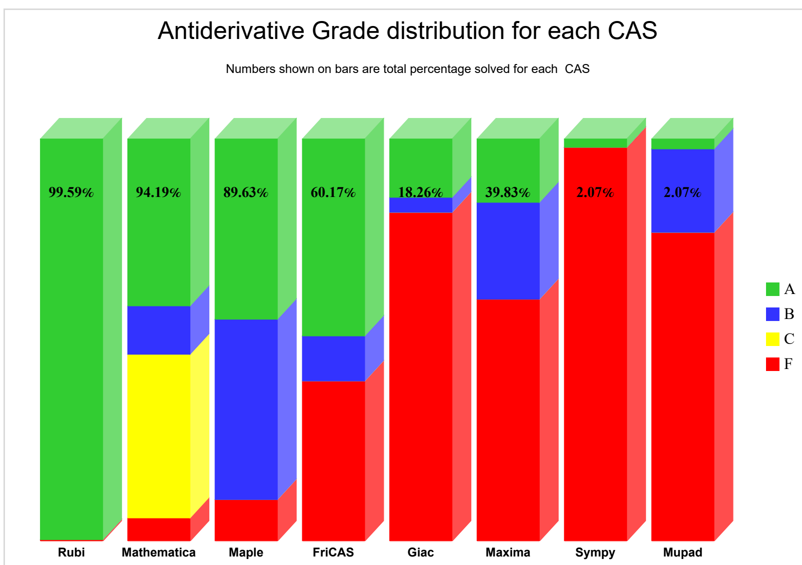
Table 1.2: Description of grading applied to integration result

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

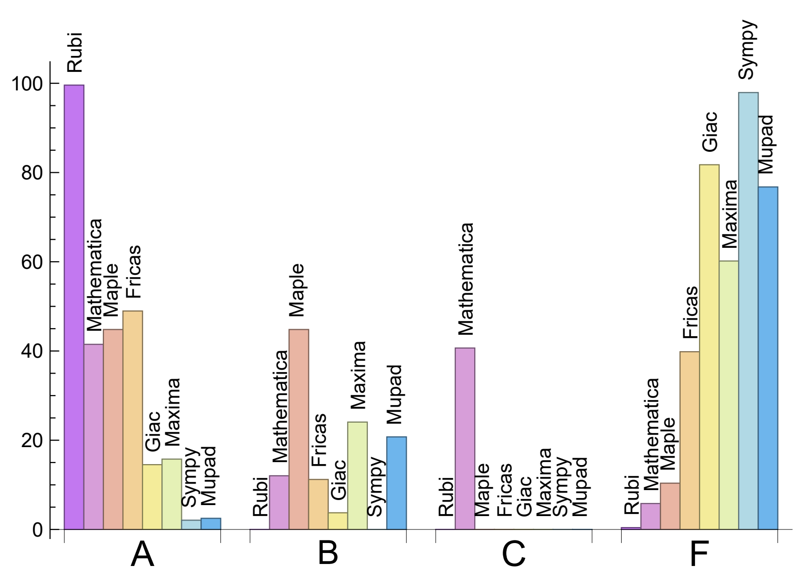
System	% A grade	% B grade	% C grade	% F grade
Rubi	99.59	0.00	0.00	0.41
Mathematica	41.49	12.03	40.66	5.81
Maple	44.81	44.81	0.00	10.37
Maxima	15.77	24.07	0.00	60.17
Fricas	48.96	11.20	0.00	39.83
Sympy	2.07	0.00	0.00	97.93
Giac	14.52	3.73	0.00	81.74
Mupad	2.49	20.75	0.00	76.76

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 time-out failure	Percentage exception failure
Rubi	1	100.00 %	0.00 %	0.00 %
Mathematica	14	100.00 %	0.00 %	0.00 %
Maple	25	92.00 %	0.00 %	8.00 %
Maxima	145	52.41 %	30.34 %	17.24 %
Fricas	96	67.71 %	32.29 %	0.00 %
Sympy	236	83.05 %	16.95 %	0.00 %
Giac	197	27.41 %	6.09 %	66.50 %
Mupad	185	92.97 %	7.03 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

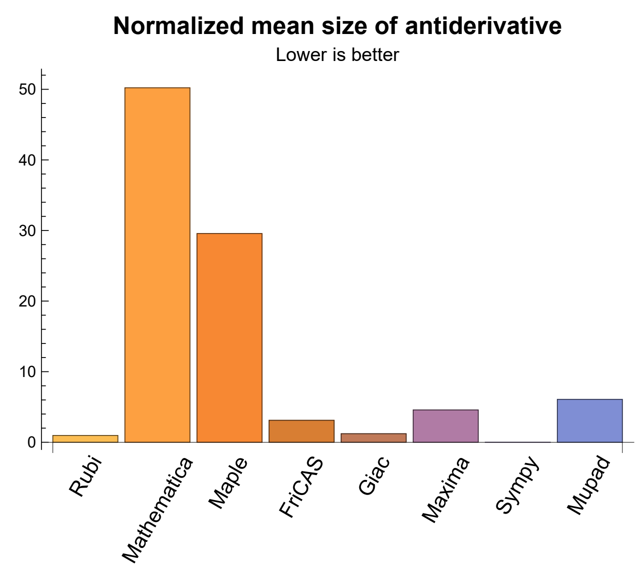
1.3 Performance

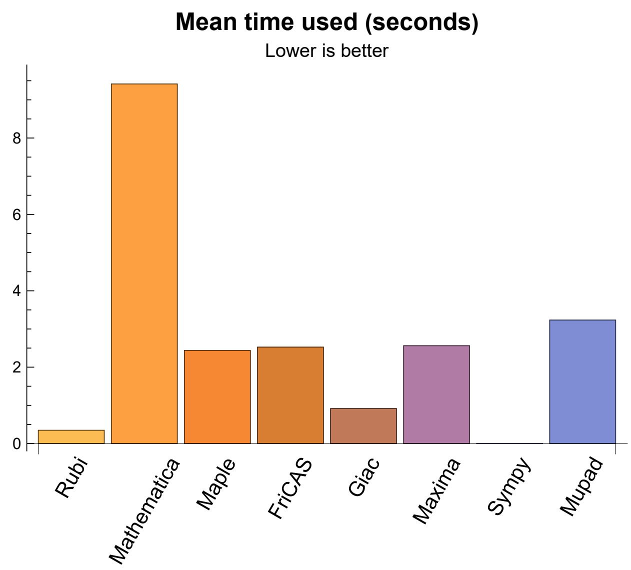
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.35	211.50	0.96	153.00	1.00
Mathematica	9.42	24977.16	50.22	171.00	1.22
Maple	2.44	14803.56	29.57	286.50	1.80
Maxima	2.56	769.52	4.58	243.00	2.34
Fricas	2.53	544.61	3.11	405.00	2.85
Sympy	0.00	0.00	0.00	0.00	0.00
Giac	0.92	260.95	1.21	93.00	0.85
Mupad	3.23	1611.38	6.08	122.00	1.08

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

{221, 222, 223, 224, 225, 226, 227, 228, 229, 236}

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 {62, 63, 64, 70, 71, 77, 78, 85, 147, 148, 149, 151, 152, 153, 158, 159, 163, 165, 166, 167, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 200, 202, 206, 207, 209, 210, 211, 212, 213, 214, 215, 216, 217, 220, 230, 231, 232, 240, 241}

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.

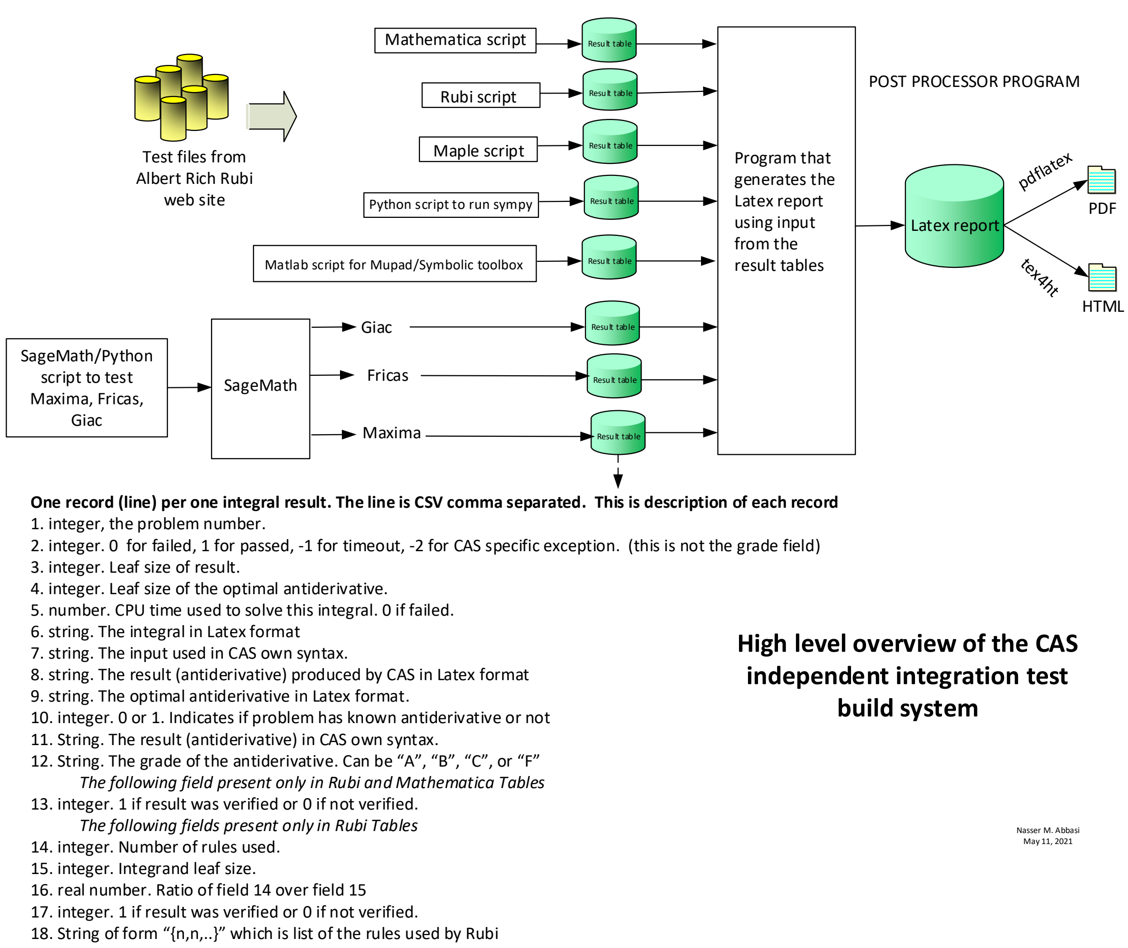
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

```
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, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241 }

B grade: { }

C grade: { }

F grade: { 217 }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 19, 20, 24, 25, 26, 29, 30, 32, 33, 34, 35, 36, 41, 42, 43, 44, 45, 46, 50, 51, 52, 53, 54, 57, 58, 59, 60, 61, 65, 66, 67, 68, 69, 72, 73, 74, 75, 76, 79, 80, 81, 82, 83, 84, 145, 146, 150, 154, 155, 156, 157, 160, 161, 162, 164, 168, 184, 185, 186, 187, 188, 189, 190, 191, 192, 194, 196, 199, 201, 203, 204, 208, 218, 221, 222, 223, 224, 225, 226, 227, 228, 229, 233, 236, 237, 238, 239 }

B grade: { 6, 16, 17, 21, 22, 23, 28, 31, 37, 39, 40, 144, 193, 195, 197, 200, 202, 209, 210, 211, 212, 213, 214, 215, 216, 220, 230, 240, 241 }

C grade: { 7, 18, 27, 38, 47, 48, 49, 55, 56, 62, 63, 64, 70, 71, 77, 78, 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, 143, 147, 148, 149, 151, 152, 153, 158, 159, 163, 165, 166, 167, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 198, 205, 206, 207, 217, 219, 231, 232 }

F grade: { 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 234, 235 }

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, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 41, 44, 45, 46, 51, 60, 68, 69, 86, 87, 88, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 108, 109, 110, 111, 112, 113, 115, 116, 117, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 143, 144, 145, 146, 149, 189, 201, 203, 204, 207, 208, 217, 218, 219, 221, 222, 223, 224, 225, 226, 227, 228, 229, 236 }

B grade: { 42, 43, 47, 48, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 64, 65, 66, 67, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 89, 90, 105, 106, 107, 114, 118, 147, 148, 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, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 202, 205, 206, 209, 210, 211, 212, 213, 214, 215, 216, 220 }

C grade: { }

F grade: { 27, 38, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 230, 231, 232, 233, 234, 235, 237, 238, 239, 240, 241 }

2.1.4 Maxima

A grade: { 1, 2, 4, 5, 13, 15, 26, 27, 28, 29, 30, 35, 36, 37, 38, 39, 40, 41, 89, 90, 97, 98, 106, 112, 113, 114, 119, 125, 221, 222, 223, 224, 225, 226, 227, 228, 229, 236 }

B grade: { 3, 6, 7, 8, 9, 10, 11, 12, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 31, 32, 33, 34, 45, 52, 59, 86, 87, 88, 91, 92, 93, 94, 95, 96, 99, 100, 101, 102, 103, 107, 108, 109, 115, 116, 117, 120, 121, 122, 123, 126, 127, 128, 129, 130, 150, 156, 162 }

C grade: { }

F grade: { 42, 43, 44, 46, 47, 48, 49, 50, 51, 53, 54, 55, 56, 57, 58, 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, 104, 105, 110, 111, 118, 124, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 151, 152, 153, 154, 155, 157, 158, 159, 160, 161, 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, 230, 231, 232, 233, 234, 235, 237, 238, 239, 240, 241 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 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, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 76, 77, 78, 79, 80, 81, 82, 84, 85, 86, 87, 88, 94, 95, 96, 101, 102, 103, 130, 143, 147, 148, 149, 150, 151, 152, 154, 155, 156, 157, 158, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 172, 173, 178, 179, 184, 185, 187, 188, 189, 236 }

B grade: { 5, 22, 23, 61, 62, 63, 74, 75, 83, 89, 105, 114, 118, 122, 153, 159, 174, 180, 186, 190, 191, 192, 193, 194, 195, 196, 197 }

C grade: { }

F grade: { 90, 91, 92, 93, 97, 98, 99, 100, 104, 106, 107, 108, 109, 110, 111, 112, 113, 115, 116, 117, 119, 120, 121, 123, 124, 125, 126, 127, 128, 129, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 144, 145, 146, 170, 171, 175, 176, 177, 181, 182, 183, 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, 237, 238, 239, 240, 241 }

2.1.6 Sympy

A grade: { 221, 222, 224, 225, 236 }

B grade: { }

C grade: { }

F 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, 223, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 237, 238, 239, 240, 241 }

2.1.7 Giac

A grade: { 4, 7, 8, 9, 10, 13, 18, 19, 20, 24, 25, 26, 28, 29, 30, 33, 34, 35, 36, 37, 39, 40, 41, 190, 192, 221, 222, 223, 224, 225, 226, 227, 228, 229, 236 }

B grade: { 27, 38, 189, 191, 193, 194, 195, 196, 197 }

C grade: { }

F grade: { 1, 2, 3, 5, 6, 11, 12, 14, 15, 16, 17, 21, 22, 23, 31, 32, 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, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 230, 231, 232, 233, 234, 235, 237, 238, 239, 240, 241 }

2.1.8 Mupad

A grade: { 221, 222, 224, 225, 227, 236 }

B 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, 189, 190, 191, 192, 193, 194, 195, 196, 197 }

C grade: { }

F grade: { 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, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 223, 226, 228, 229, 230, 231, 232, 233, 234, 235, 237, 238, 239, 240, 241 }

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	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	165	186	334	179	0	0	228
normalized size	1	1.00	0.84	0.95	1.70	0.91	0.00	0.00	1.16
time (sec)	N/A	0.302	2.130	1.578	0.345	0.463	0.000	0.000	2.534

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	146	161	240	163	0	0	195
normalized size	1	1.00	1.04	1.15	1.71	1.16	0.00	0.00	1.39
time (sec)	N/A	0.199	1.166	1.406	0.341	0.518	0.000	0.000	2.300

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	122	136	203	147	0	0	163
normalized size	1	1.00	1.26	1.40	2.09	1.52	0.00	0.00	1.68
time (sec)	N/A	0.118	0.735	1.219	0.333	0.488	0.000	0.000	2.189

Problem 4	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	47	47	45	58	57	65	0	51	84
normalized size	1	1.00	0.96	1.23	1.21	1.38	0.00	1.09	1.79
time (sec)	N/A	0.065	0.031	0.820	0.321	0.433	0.000	0.303	3.709

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	72	76	95	103	0	0	91
normalized size	1	1.00	1.31	1.38	1.73	1.87	0.00	0.00	1.65
time (sec)	N/A	0.063	0.290	0.856	0.326	0.476	0.000	0.000	1.513

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	169	90	153	87	0	0	46
normalized size	1	1.00	3.02	1.61	2.73	1.55	0.00	0.00	0.82
time (sec)	N/A	0.164	0.293	0.777	0.431	0.484	0.000	0.000	1.484

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	53	67	174	88	0	60	40
normalized size	1	1.00	0.75	0.94	2.45	1.24	0.00	0.85	0.56
time (sec)	N/A	0.236	0.058	0.862	0.443	0.458	0.000	0.291	1.389

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	171	89	215	128	0	76	96
normalized size	1	1.00	1.68	0.87	2.11	1.25	0.00	0.75	0.94
time (sec)	N/A	0.329	0.629	1.046	0.445	0.425	0.000	0.462	1.450

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	227	111	294	172	0	93	124
normalized size	1	1.00	1.71	0.83	2.21	1.29	0.00	0.70	0.93
time (sec)	N/A	0.427	0.635	0.904	0.435	0.435	0.000	0.329	1.496

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	283	133	335	212	0	110	146
normalized size	1	1.00	1.73	0.81	2.04	1.29	0.00	0.67	0.89
time (sec)	N/A	0.543	0.995	0.845	0.446	0.463	0.000	0.439	1.536

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	189	211	356	195	0	0	259
normalized size	1	1.00	1.01	1.12	1.89	1.04	0.00	0.00	1.38
time (sec)	N/A	0.237	2.236	1.621	0.338	0.485	0.000	0.000	2.619

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	165	186	334	179	0	0	227
normalized size	1	1.00	1.25	1.41	2.53	1.36	0.00	0.00	1.72
time (sec)	N/A	0.151	1.871	1.646	0.338	0.526	0.000	0.000	2.593

Problem 13	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	68	68	61	93	94	81	0	69	122
normalized size	1	1.00	0.90	1.37	1.38	1.19	0.00	1.01	1.79
time (sec)	N/A	0.074	0.039	1.056	0.323	0.465	0.000	0.553	4.959

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	122	136	203	147	0	0	163
normalized size	1	1.00	1.26	1.40	2.09	1.52	0.00	0.00	1.68
time (sec)	N/A	0.114	0.798	1.254	0.337	0.496	0.000	0.000	2.133

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	101	98	107	118	0	0	104
normalized size	1	1.00	1.31	1.27	1.39	1.53	0.00	0.00	1.35
time (sec)	N/A	0.147	0.453	0.863	0.312	0.448	0.000	0.000	1.552

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	240	137	274	125	0	0	85
normalized size	1	1.00	3.08	1.76	3.51	1.60	0.00	0.00	1.09
time (sec)	N/A	0.209	2.580	0.701	0.434	0.515	0.000	0.000	1.479

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	177	90	274	156	0	0	45
normalized size	1	1.00	2.01	1.02	3.11	1.77	0.00	0.00	0.51
time (sec)	N/A	0.361	1.182	0.833	0.439	0.455	0.000	0.000	1.437

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	53	89	282	128	0	77	96
normalized size	1	1.00	0.52	0.87	2.76	1.25	0.00	0.75	0.94
time (sec)	N/A	0.452	0.099	0.819	0.443	0.429	0.000	0.396	1.378

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	227	111	383	172	0	93	122
normalized size	1	1.00	1.71	0.83	2.88	1.29	0.00	0.70	0.92
time (sec)	N/A	0.579	0.599	0.881	0.447	0.453	0.000	0.588	1.438

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	283	133	403	212	0	110	146
normalized size	1	1.00	1.73	0.81	2.46	1.29	0.00	0.67	0.89
time (sec)	N/A	0.733	0.902	0.893	0.458	0.438	0.000	0.555	1.461

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	153	384	207	603	242	0	0	145
normalized size	1	1.12	2.82	1.52	4.43	1.78	0.00	0.00	1.07
time (sec)	N/A	0.402	3.151	0.708	0.438	0.459	0.000	0.000	1.495

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	B	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	753	159	413	220	0	0	112
normalized size	1	1.00	7.38	1.56	4.05	2.16	0.00	0.00	1.10
time (sec)	N/A	0.309	6.262	0.679	0.442	0.488	0.000	0.000	1.471

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	B	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	216	90	268	173	0	0	46
normalized size	1	1.00	2.54	1.06	3.15	2.04	0.00	0.00	0.54
time (sec)	N/A	0.331	1.096	0.818	0.431	0.463	0.000	0.000	1.410

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	67	65	170	94	0	63	38
normalized size	1	1.00	1.00	0.97	2.54	1.40	0.00	0.94	0.57
time (sec)	N/A	0.228	0.051	0.859	0.428	0.450	0.000	0.392	1.375

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	113	59	119	86	0	56	41
normalized size	1	1.00	1.85	0.97	1.95	1.41	0.00	0.92	0.67
time (sec)	N/A	0.145	0.312	0.900	0.422	0.470	0.000	0.277	1.336

Problem 26	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	69	69	135	87	102	70	0	85	69
normalized size	1	1.00	1.96	1.26	1.48	1.01	0.00	1.23	1.00
time (sec)	N/A	0.114	0.548	0.840	0.428	0.425	0.000	0.398	1.422

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F(-2)	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	39	0	46	81	0	100	58
normalized size	1	1.00	0.85	0.00	1.00	1.76	0.00	2.17	1.26
time (sec)	N/A	0.071	0.049	180.000	0.422	0.414	0.000	0.288	1.468

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	257	130	147	154	0	116	161
normalized size	1	1.00	2.62	1.33	1.50	1.57	0.00	1.18	1.64
time (sec)	N/A	0.145	1.411	1.100	0.426	0.424	0.000	0.434	1.544

Problem 29	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	166	166	315	153	167	166	0	129	185
normalized size	1	1.00	1.90	0.92	1.01	1.00	0.00	0.78	1.11
time (sec)	N/A	0.211	1.271	0.950	0.428	0.490	0.000	0.948	1.635

Problem 30	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	210	210	383	175	186	232	0	143	209
normalized size	1	1.00	1.82	0.83	0.89	1.10	0.00	0.68	1.00
time (sec)	N/A	0.286	1.199	0.945	0.429	0.424	0.000	0.476	1.779

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	557	179	562	289	0	0	134
normalized size	1	1.00	3.44	1.10	3.47	1.78	0.00	0.00	0.83
time (sec)	N/A	0.443	5.880	0.641	0.435	0.452	0.000	0.000	1.490

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	231	110	396	242	0	0	50
normalized size	1	1.00	1.56	0.74	2.68	1.64	0.00	0.00	0.34
time (sec)	N/A	0.606	1.202	0.772	0.435	0.480	0.000	0.000	1.421

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	90	87	277	138	0	84	93
normalized size	1	1.00	0.94	0.91	2.89	1.44	0.00	0.88	0.97
time (sec)	N/A	0.421	0.078	0.794	0.432	0.439	0.000	0.374	1.404

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	171	87	211	138	0	84	93
normalized size	1	1.00	1.78	0.91	2.20	1.44	0.00	0.88	0.97
time (sec)	N/A	0.304	0.466	0.768	0.435	0.442	0.000	0.333	1.396

Problem 35	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	88	88	169	79	159	124	0	75	85
normalized size	1	1.00	1.92	0.90	1.81	1.41	0.00	0.85	0.97
time (sec)	N/A	0.202	0.460	0.752	0.430	0.427	0.000	1.193	1.377

Problem 36	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	126	126	197	109	122	109	0	107	82
normalized size	1	1.00	1.56	0.87	0.97	0.87	0.00	0.85	0.65
time (sec)	N/A	0.193	0.988	0.985	0.425	0.428	0.000	0.331	1.425

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	257	131	146	154	0	122	161
normalized size	1	1.00	2.57	1.31	1.46	1.54	0.00	1.22	1.61
time (sec)	N/A	0.143	1.008	1.083	0.425	0.426	0.000	0.350	1.504

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F(-2)	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	39	0	56	118	0	136	94
normalized size	1	1.00	0.58	0.00	0.84	1.76	0.00	2.03	1.40
time (sec)	N/A	0.081	0.070	180.000	0.427	0.448	0.000	0.459	1.569

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	362	174	187	232	0	150	209
normalized size	1	1.00	2.81	1.35	1.45	1.80	0.00	1.16	1.62
time (sec)	N/A	0.173	1.405	0.981	0.440	0.447	0.000	0.438	1.852

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	441	197	205	271	0	163	233
normalized size	1	1.00	2.10	0.94	0.98	1.29	0.00	0.78	1.11
time (sec)	N/A	0.236	1.742	0.982	0.444	0.462	0.000	0.507	2.041

Problem 41	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	252	252	499	219	227	310	0	179	257
normalized size	1	1.00	1.98	0.87	0.90	1.23	0.00	0.71	1.02
time (sec)	N/A	0.300	2.362	0.999	0.449	0.455	0.000	0.981	2.328

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	121	391	0	373	0	0	-1
normalized size	1	1.00	0.69	2.23	0.00	2.13	0.00	0.00	-0.01
time (sec)	N/A	0.176	1.048	1.896	0.000	0.507	0.000	0.000	0.000

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	111	302	0	347	0	0	-1
normalized size	1	1.00	0.79	2.16	0.00	2.48	0.00	0.00	-0.01
time (sec)	N/A	0.168	1.195	1.747	0.000	0.481	0.000	0.000	0.000

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	97	142	0	313	0	0	-1
normalized size	1	1.00	0.92	1.35	0.00	2.98	0.00	0.00	-0.01
time (sec)	N/A	0.158	0.885	1.714	0.000	0.494	0.000	0.000	0.000

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	70	115	147	234	0	0	-1
normalized size	1	1.00	1.06	1.74	2.23	3.55	0.00	0.00	-0.02
time (sec)	N/A	0.109	0.321	1.420	0.835	0.444	0.000	0.000	0.000

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	90	116	0	266	0	0	-1
normalized size	1	1.00	1.30	1.68	0.00	3.86	0.00	0.00	-0.01
time (sec)	N/A	0.148	0.588	1.585	0.000	0.589	0.000	0.000	0.000

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	78	214	0	339	0	0	-1
normalized size	1	1.00	0.75	2.06	0.00	3.26	0.00	0.00	-0.01
time (sec)	N/A	0.157	0.242	1.682	0.000	0.545	0.000	0.000	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	78	311	0	405	0	0	-1
normalized size	1	1.00	0.56	2.24	0.00	2.91	0.00	0.00	-0.01
time (sec)	N/A	0.167	0.265	1.899	0.000	0.580	0.000	0.000	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	78	402	0	475	0	0	-1
normalized size	1	1.00	0.45	2.31	0.00	2.73	0.00	0.00	-0.01
time (sec)	N/A	0.177	0.244	2.200	0.000	0.639	0.000	0.000	0.000

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	122	392	0	385	0	0	-1
normalized size	1	1.00	0.69	2.21	0.00	2.18	0.00	0.00	-0.01
time (sec)	N/A	0.184	0.949	2.332	0.000	0.483	0.000	0.000	0.000

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	112	232	0	355	0	0	-1
normalized size	1	1.00	0.79	1.63	0.00	2.50	0.00	0.00	-0.01
time (sec)	N/A	0.170	0.908	1.840	0.000	0.462	0.000	0.000	0.000

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	96	212	998	303	0	0	-1
normalized size	1	1.00	0.95	2.10	9.88	3.00	0.00	0.00	-0.01
time (sec)	N/A	0.123	0.677	1.431	0.818	0.459	0.000	0.000	0.000

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	93	194	0	269	0	0	-1
normalized size	1	1.00	1.33	2.77	0.00	3.84	0.00	0.00	-0.01
time (sec)	N/A	0.156	0.584	1.374	0.000	0.540	0.000	0.000	0.000

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	113	215	0	351	0	0	-1
normalized size	1	1.00	1.11	2.11	0.00	3.44	0.00	0.00	-0.01
time (sec)	N/A	0.162	0.643	1.550	0.000	0.549	0.000	0.000	0.000

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	102	304	0	417	0	0	-1
normalized size	1	1.00	0.74	2.22	0.00	3.04	0.00	0.00	-0.01
time (sec)	N/A	0.178	0.804	1.762	0.000	0.560	0.000	0.000	0.000

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	102	401	0	495	0	0	-1
normalized size	1	1.00	0.59	2.33	0.00	2.88	0.00	0.00	-0.01
time (sec)	N/A	0.187	1.291	1.768	0.000	0.603	0.000	0.000	0.000

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	134	483	0	441	0	0	-1
normalized size	1	1.00	0.63	2.28	0.00	2.08	0.00	0.00	-0.00
time (sec)	N/A	0.191	1.305	1.837	0.000	0.525	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	124	323	0	409	0	0	-1
normalized size	1	1.00	0.70	1.82	0.00	2.31	0.00	0.00	-0.01
time (sec)	N/A	0.174	0.924	1.572	0.000	0.490	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	110	303	1396	353	0	0	-1
normalized size	1	1.00	0.83	2.30	10.58	2.67	0.00	0.00	-0.01
time (sec)	N/A	0.141	0.813	1.368	1.146	0.500	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	96	120	0	291	0	0	-1
normalized size	1	1.00	0.93	1.17	0.00	2.83	0.00	0.00	-0.01
time (sec)	N/A	0.172	0.719	1.356	0.000	0.577	0.000	0.000	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	B	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	102	351	0	339	0	0	-1
normalized size	1	1.00	1.38	4.74	0.00	4.58	0.00	0.00	-0.01
time (sec)	N/A	0.168	4.224	1.419	0.000	0.567	0.000	0.000	0.000

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	B	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	196	306	0	441	0	0	-1
normalized size	1	1.00	1.88	2.94	0.00	4.24	0.00	0.00	-0.01
time (sec)	N/A	0.177	5.331	1.619	0.000	0.570	0.000	0.000	0.000

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	B	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	361	395	0	527	0	0	-1
normalized size	1	1.00	2.58	2.82	0.00	3.76	0.00	0.00	-0.01
time (sec)	N/A	0.184	7.977	1.627	0.000	0.567	0.000	0.000	0.000

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	205	492	0	601	0	0	-1
normalized size	1	1.00	1.19	2.86	0.00	3.49	0.00	0.00	-0.01
time (sec)	N/A	0.198	3.561	1.899	0.000	0.576	0.000	0.000	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	153	544	0	552	0	0	-1
normalized size	1	1.00	0.83	2.94	0.00	2.98	0.00	0.00	-0.01
time (sec)	N/A	0.276	1.452	1.974	0.000	1.257	0.000	0.000	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	166	372	0	518	0	0	-1
normalized size	1	1.00	1.09	2.45	0.00	3.41	0.00	0.00	-0.01
time (sec)	N/A	0.228	1.331	1.921	0.000	1.029	0.000	0.000	0.000

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	124	329	0	438	0	0	-1
normalized size	1	1.00	1.04	2.76	0.00	3.68	0.00	0.00	-0.01
time (sec)	N/A	0.188	0.506	1.897	0.000	0.725	0.000	0.000	0.000

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	82	144	0	298	0	0	-1
normalized size	1	1.00	0.94	1.66	0.00	3.43	0.00	0.00	-0.01
time (sec)	N/A	0.138	0.297	1.523	0.000	0.597	0.000	0.000	0.000

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	101	194	0	436	0	0	-1
normalized size	1	1.00	0.83	1.60	0.00	3.60	0.00	0.00	-0.01
time (sec)	N/A	0.192	0.575	1.719	0.000	0.618	0.000	0.000	0.000

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	161	161	5576	377	0	520	0	0	-1
normalized size	1	1.00	34.63	2.34	0.00	3.23	0.00	0.00	-0.01
time (sec)	N/A	0.235	24.117	1.952	0.000	0.604	0.000	0.000	0.000

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	5592	545	0	608	0	0	-1
normalized size	1	1.00	28.53	2.78	0.00	3.10	0.00	0.00	-0.01
time (sec)	N/A	0.284	23.742	2.566	0.000	0.610	0.000	0.000	0.000

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	196	552	0	634	0	0	-1
normalized size	1	1.00	0.97	2.72	0.00	3.12	0.00	0.00	-0.00
time (sec)	N/A	0.286	1.579	1.970	0.000	1.869	0.000	0.000	0.000

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	132	377	0	550	0	0	-1
normalized size	1	1.00	0.78	2.23	0.00	3.25	0.00	0.00	-0.01
time (sec)	N/A	0.240	1.772	1.992	0.000	1.018	0.000	0.000	0.000

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	134	128	369	0	542	0	0	-1
normalized size	1	1.13	1.08	3.10	0.00	4.55	0.00	0.00	-0.01
time (sec)	N/A	0.192	1.114	1.762	0.000	0.934	0.000	0.000	0.000

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	130	130	371	0	505	0	0	-1
normalized size	1	1.15	1.15	3.28	0.00	4.47	0.00	0.00	-0.01
time (sec)	N/A	0.166	1.003	1.870	0.000	0.666	0.000	0.000	0.000

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	154	377	0	514	0	0	-1
normalized size	1	1.00	0.87	2.13	0.00	2.90	0.00	0.00	-0.01
time (sec)	N/A	0.244	1.185	1.904	0.000	0.631	0.000	0.000	0.000

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	5612	387	0	560	0	0	-1
normalized size	1	1.00	26.22	1.81	0.00	2.62	0.00	0.00	-0.00
time (sec)	N/A	0.278	24.032	2.498	0.000	0.652	0.000	0.000	0.000

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	5629	725	0	714	0	0	-1
normalized size	1	1.00	22.61	2.91	0.00	2.87	0.00	0.00	-0.00
time (sec)	N/A	0.340	23.977	2.508	0.000	0.693	0.000	0.000	0.000

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	260	260	180	726	0	742	0	0	-1
normalized size	1	1.00	0.69	2.79	0.00	2.85	0.00	0.00	-0.00
time (sec)	N/A	0.341	3.642	2.549	0.000	2.963	0.000	0.000	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	164	550	0	655	0	0	-1
normalized size	1	1.00	0.72	2.40	0.00	2.86	0.00	0.00	-0.00
time (sec)	N/A	0.296	2.680	2.058	0.000	2.476	0.000	0.000	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	136	553	0	645	0	0	-1
normalized size	1	1.00	0.71	2.90	0.00	3.38	0.00	0.00	-0.01
time (sec)	N/A	0.252	1.590	2.112	0.000	1.982	0.000	0.000	0.000

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	136	545	0	645	0	0	-1
normalized size	1	1.00	0.72	2.88	0.00	3.41	0.00	0.00	-0.01
time (sec)	N/A	0.230	1.561	1.879	0.000	1.529	0.000	0.000	0.000

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	181	134	543	0	605	0	0	-1
normalized size	1	1.22	0.91	3.67	0.00	4.09	0.00	0.00	-0.01
time (sec)	N/A	0.192	1.490	1.618	0.000	1.035	0.000	0.000	0.000

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	158	545	0	608	0	0	-1
normalized size	1	1.00	0.69	2.37	0.00	2.64	0.00	0.00	-0.00
time (sec)	N/A	0.306	1.519	2.158	0.000	0.658	0.000	0.000	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	269	269	5650	725	0	706	0	0	-1
normalized size	1	1.00	21.00	2.70	0.00	2.62	0.00	0.00	-0.00
time (sec)	N/A	0.335	24.173	2.328	0.000	0.675	0.000	0.000	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	149	195	1289	459	0	0	-1
normalized size	1	1.00	0.81	1.05	6.97	2.48	0.00	0.00	-0.01
time (sec)	N/A	0.372	6.136	2.575	0.887	0.592	0.000	0.000	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	162	185	710	425	0	0	-1
normalized size	1	1.00	1.17	1.33	5.11	3.06	0.00	0.00	-0.01
time (sec)	N/A	0.273	2.311	2.354	1.041	0.566	0.000	0.000	0.000

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	99	165	243	350	0	0	-1
normalized size	1	1.00	1.06	1.77	2.61	3.76	0.00	0.00	-0.01
time (sec)	N/A	0.178	1.244	2.306	0.774	0.569	0.000	0.000	0.000

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	102	128	39	200	0	0	-1
normalized size	1	1.00	2.12	2.67	0.81	4.17	0.00	0.00	-0.02
time (sec)	N/A	0.084	0.582	2.398	0.813	0.571	0.000	0.000	0.000

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	86	100	65	0	0	0	-1
normalized size	1	1.00	1.69	1.96	1.27	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.086	0.978	2.120	0.593	0.567	0.000	0.000	0.000

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	107	164	399	0	0	0	-1
normalized size	1	1.00	1.11	1.71	4.16	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.179	1.042	2.548	1.028	0.545	0.000	0.000	0.000

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	152	226	1173	0	0	0	-1
normalized size	1	1.00	1.07	1.59	8.26	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.271	1.254	2.678	1.097	0.552	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	198	288	2444	0	0	0	-1
normalized size	1	1.00	1.05	1.53	13.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.366	1.942	2.179	4.634	0.564	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	157	190	1356	467	0	0	-1
normalized size	1	1.00	0.83	1.00	7.14	2.46	0.00	0.00	-0.01
time (sec)	N/A	0.364	1.278	2.002	1.052	0.571	0.000	0.000	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	159	172	477	346	0	0	-1
normalized size	1	1.00	1.54	1.67	4.63	3.36	0.00	0.00	-0.01
time (sec)	N/A	0.110	1.391	2.084	0.887	0.587	0.000	0.000	0.000

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	128	152	243	347	0	0	-1
normalized size	1	1.00	1.38	1.63	2.61	3.73	0.00	0.00	-0.01
time (sec)	N/A	0.169	0.784	2.031	0.991	0.566	0.000	0.000	0.000

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	105	157	60	0	0	0	-1
normalized size	1	1.00	1.01	1.51	0.58	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.103	1.201	1.948	0.556	0.632	0.000	0.000	0.000

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	115	161	95	0	0	0	-1
normalized size	1	1.00	1.15	1.61	0.95	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.186	0.685	1.973	0.723	0.567	0.000	0.000	0.000

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	153	227	1786	0	0	0	-1
normalized size	1	1.00	1.05	1.55	12.23	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.283	1.272	2.095	1.213	0.569	0.000	0.000	0.000

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	199	289	3480	0	0	0	-1
normalized size	1	1.00	1.02	1.47	17.76	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.382	2.202	2.295	3.656	0.614	0.000	0.000	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	164	192	1619	405	0	0	-1
normalized size	1	1.00	1.07	1.25	10.58	2.65	0.00	0.00	-0.01
time (sec)	N/A	0.120	1.536	2.104	1.181	0.599	0.000	0.000	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	149	200	1356	467	0	0	-1
normalized size	1	1.00	0.78	1.05	7.14	2.46	0.00	0.00	-0.01
time (sec)	N/A	0.363	1.196	2.047	1.114	0.579	0.000	0.000	0.000

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	164	180	710	420	0	0	-1
normalized size	1	1.00	1.18	1.29	5.11	3.02	0.00	0.00	-0.01
time (sec)	N/A	0.263	1.404	2.324	1.051	0.560	0.000	0.000	0.000

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	292	184	0	0	0	0	-1
normalized size	1	1.00	1.92	1.21	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.114	6.764	2.061	0.000	0.616	0.000	0.000	0.000

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	111	239	0	442	0	0	-1
normalized size	1	1.00	1.16	2.49	0.00	4.60	0.00	0.00	-0.01
time (sec)	N/A	0.179	1.294	2.256	0.000	0.585	0.000	0.000	0.000

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	155	229	139	0	0	0	-1
normalized size	1	1.00	1.55	2.29	1.39	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.181	1.386	2.251	0.567	0.558	0.000	0.000	0.000

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	202	281	3738	0	0	0	-1
normalized size	1	1.00	1.36	1.90	25.26	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.278	2.670	2.369	4.396	0.571	0.000	0.000	0.000

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	285	353	6134	0	0	0	-1
normalized size	1	1.00	1.47	1.82	31.62	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.376	5.498	2.352	24.801	0.616	0.000	0.000	0.000

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	299	415	9150	0	0	0	-1
normalized size	1	1.00	1.23	1.70	37.50	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.474	5.986	2.192	146.306	0.613	0.000	0.000	0.000

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	153	190	0	0	0	0	-1
normalized size	1	1.00	0.75	0.93	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.124	16.348	2.216	0.000	0.633	0.000	0.000	0.000

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	181	170	0	0	0	0	-1
normalized size	1	1.00	1.20	1.13	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.113	4.017	2.238	0.000	0.615	0.000	0.000	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	103	93	60	0	0	0	-1
normalized size	1	1.00	1.01	0.91	0.59	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.107	9.715	2.396	0.835	0.618	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	127	75	34	0	0	0	-1
normalized size	1	1.00	2.59	1.53	0.69	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.084	0.981	2.411	0.729	0.523	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	104	101	39	272	0	0	-1
normalized size	1	1.00	2.26	2.20	0.85	5.91	0.00	0.00	-0.02
time (sec)	N/A	0.090	1.085	2.376	0.838	0.725	0.000	0.000	0.000

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	217	143	167	818	0	0	0	-1
normalized size	1	1.29	0.85	0.99	4.87	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	8.673	2.591	0.950	0.650	0.000	0.000	0.000

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	274	274	194	229	2206	0	0	0	-1
normalized size	1	1.00	0.71	0.84	8.05	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.161	1.930	2.587	1.279	1.018	0.000	0.000	0.000

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	204	278	2393	0	0	0	-1
normalized size	1	1.00	0.95	1.29	11.13	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.145	2.275	2.271	1.484	0.736	0.000	0.000	0.000

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	116	238	0	453	0	0	-1
normalized size	1	1.00	1.21	2.48	0.00	4.72	0.00	0.00	-0.01
time (sec)	N/A	0.193	0.744	2.163	0.000	0.576	0.000	0.000	0.000

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	114	106	70	0	0	0	-1
normalized size	1	1.00	1.16	1.08	0.71	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.196	1.140	2.191	0.726	0.526	0.000	0.000	0.000

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	106	119	395	0	0	0	-1
normalized size	1	1.00	1.13	1.27	4.20	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.189	0.633	2.302	0.957	0.551	0.000	0.000	0.000

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	141	159	818	0	0	0	-1
normalized size	1	1.00	0.66	0.74	3.80	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.146	1.418	2.433	0.958	0.806	0.000	0.000	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	121	173	486	492	0	0	-1
normalized size	1	1.00	1.20	1.71	4.81	4.87	0.00	0.00	-0.01
time (sec)	N/A	0.121	1.528	2.391	0.880	0.863	0.000	0.000	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	275	293	4272	0	0	0	-1
normalized size	1	1.00	0.79	0.84	12.31	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.184	2.619	2.948	4.183	0.801	0.000	0.000	0.000

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	157	338	0	0	0	0	-1
normalized size	1	1.00	0.71	1.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.144	2.540	2.602	0.000	0.692	0.000	0.000	0.000

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	154	144	102	0	0	0	-1
normalized size	1	1.00	1.57	1.47	1.04	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.187	1.572	2.747	0.714	0.559	0.000	0.000	0.000

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	152	152	1786	0	0	0	-1
normalized size	1	1.00	1.06	1.06	12.40	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.288	0.866	2.653	1.146	0.557	0.000	0.000	0.000

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	151	152	1165	0	0	0	-1
normalized size	1	1.00	1.08	1.09	8.32	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.282	0.675	2.787	1.397	0.574	0.000	0.000	0.000

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	195	223	2206	0	0	0	-1
normalized size	1	1.00	0.72	0.83	8.17	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.154	1.659	2.707	1.144	0.771	0.000	0.000	0.000

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	275	284	4272	0	0	0	-1
normalized size	1	1.00	0.80	0.82	12.38	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.181	2.400	2.604	4.632	0.795	0.000	0.000	0.000

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	149	237	1386	564	0	0	-1
normalized size	1	1.00	0.99	1.57	9.18	3.74	0.00	0.00	-0.01
time (sec)	N/A	0.131	2.192	2.480	1.338	1.022	0.000	0.000	0.000

Problem 131	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	92	92	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	1.103	2.135	0.000	0.478	0.000	0.000	0.000

Problem 132	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	109	109	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.122	0.445	2.389	0.000	0.507	0.000	0.000	0.000

Problem 133	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	101	101	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.100	3.242	2.857	0.000	0.452	0.000	0.000	0.000

Problem 134	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	101	101	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.099	1.526	2.293	0.000	0.460	0.000	0.000	0.000

Problem 135	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	99	99	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.075	1.598	2.099	0.000	0.431	0.000	0.000	0.000

Problem 136	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	99	99	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.100	0.999	2.274	0.000	0.433	0.000	0.000	0.000

Problem 137	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	101	101	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.100	1.726	1.752	0.000	0.442	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.145	8.540	1.739	0.000	0.453	0.000	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.162	11.826	1.727	0.000	0.466	0.000	0.000	0.000

Problem 140	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	68	68	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.083	0.143	1.883	0.000	0.455	0.000	0.000	0.000

Problem 141	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	139	139	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	1.363	1.928	0.000	0.447	0.000	0.000	0.000

Problem 142	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	205	205	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.168	1.765	2.005	0.000	0.461	0.000	0.000	0.000

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	133	141	0	293	0	0	-1
normalized size	1	1.00	1.46	1.55	0.00	3.22	0.00	0.00	-0.01
time (sec)	N/A	0.082	0.652	1.781	0.000	0.556	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	810	295	0	0	0	0	-1
normalized size	1	1.00	3.51	1.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.257	18.228	1.923	0.000	0.826	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	178	285	0	0	0	0	-1
normalized size	1	1.00	0.79	1.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.211	8.746	1.985	0.000	22.527	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	319	319	187	327	0	0	0	0	-1
normalized size	1	1.00	0.59	1.03	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.370	12.708	2.100	0.000	0.818	0.000	0.000	0.000

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	271	271	587	546	0	472	0	0	-1
normalized size	1	1.00	2.17	2.01	0.00	1.74	0.00	0.00	-0.00
time (sec)	N/A	0.173	14.296	2.134	0.000	0.512	0.000	0.000	0.000

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	517	389	0	392	0	0	-1
normalized size	1	1.00	2.52	1.90	0.00	1.91	0.00	0.00	-0.00
time (sec)	N/A	0.141	14.186	1.955	0.000	0.483	0.000	0.000	0.000

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	444	248	0	320	0	0	-1
normalized size	1	1.00	3.08	1.72	0.00	2.22	0.00	0.00	-0.01
time (sec)	N/A	0.116	6.589	1.735	0.000	0.478	0.000	0.000	0.000

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	76	118	147	235	0	0	-1
normalized size	1	1.00	1.15	1.79	2.23	3.56	0.00	0.00	-0.02
time (sec)	N/A	0.087	0.315	1.546	0.592	0.501	0.000	0.000	0.000

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	2650	502	0	669	0	0	-1
normalized size	1	1.00	25.24	4.78	0.00	6.37	0.00	0.00	-0.01
time (sec)	N/A	0.230	25.068	1.750	0.000	0.868	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	2907	97265	0	1413	0	0	-1
normalized size	1	1.00	13.27	444.13	0.00	6.45	0.00	0.00	-0.00
time (sec)	N/A	0.222	28.578	2.998	0.000	2.865	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	B	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	3070	330749	0	2368	0	0	-1
normalized size	1	1.00	10.70	1152.44	0.00	8.25	0.00	0.00	-0.00
time (sec)	N/A	0.307	24.493	19.097	0.000	7.738	0.000	0.000	0.000

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	219	539	0	482	0	0	-1
normalized size	1	1.00	0.91	2.24	0.00	2.00	0.00	0.00	-0.00
time (sec)	N/A	0.200	3.892	1.853	0.000	0.502	0.000	0.000	0.000

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	145	382	0	398	0	0	-1
normalized size	1	1.00	0.82	2.17	0.00	2.26	0.00	0.00	-0.01
time (sec)	N/A	0.144	1.335	1.674	0.000	0.504	0.000	0.000	0.000

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	102	237	998	316	0	0	-1
normalized size	1	1.00	0.97	2.26	9.50	3.01	0.00	0.00	-0.01
time (sec)	N/A	0.150	0.590	1.536	1.400	0.511	0.000	0.000	0.000

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	135	864	0	731	0	0	-1
normalized size	1	1.00	1.23	7.85	0.00	6.65	0.00	0.00	-0.01
time (sec)	N/A	0.241	0.497	1.493	0.000	1.625	0.000	0.000	0.000

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	2862	62283	0	1640	0	0	-1
normalized size	1	1.00	12.50	271.98	0.00	7.16	0.00	0.00	-0.00
time (sec)	N/A	0.249	24.922	3.116	0.000	7.403	0.000	0.000	0.000

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	B	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	3166	234091	0	2729	0	0	-1
normalized size	1	1.00	10.21	755.13	0.00	8.80	0.00	0.00	-0.00
time (sec)	N/A	0.342	24.704	11.531	0.000	20.444	0.000	0.000	0.000

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	336	336	286	677	0	620	0	0	-1
normalized size	1	1.00	0.85	2.01	0.00	1.85	0.00	0.00	-0.00
time (sec)	N/A	0.209	6.496	1.908	0.000	0.522	0.000	0.000	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	191	504	0	500	0	0	-1
normalized size	1	1.00	0.74	1.95	0.00	1.94	0.00	0.00	-0.00
time (sec)	N/A	0.177	2.669	1.797	0.000	0.539	0.000	0.000	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	128	341	1396	390	0	0	-1
normalized size	1	1.00	0.90	2.40	9.83	2.75	0.00	0.00	-0.01
time (sec)	N/A	0.232	1.026	1.481	0.799	0.461	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	343	1487	0	1140	0	0	-1
normalized size	1	1.00	1.69	7.33	0.00	5.62	0.00	0.00	-0.00
time (sec)	N/A	0.232	6.547	1.498	0.000	5.105	0.000	0.000	0.000

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	329	329	280	46082	0	2031	0	0	-1
normalized size	1	1.00	0.85	140.07	0.00	6.17	0.00	0.00	-0.00
time (sec)	N/A	0.337	3.645	2.123	0.000	23.656	0.000	0.000	0.000

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	536	536	3344	209489	0	3351	0	0	-1
normalized size	1	1.00	6.24	390.84	0.00	6.25	0.00	0.00	-0.00
time (sec)	N/A	0.492	26.115	8.149	0.000	40.755	0.000	0.000	0.000

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	787	907	0	619	0	0	-1
normalized size	1	1.00	3.05	3.52	0.00	2.40	0.00	0.00	-0.00
time (sec)	N/A	0.207	7.240	1.913	0.000	13.682	0.000	0.000	0.000

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	295	358	0	481	0	0	-1
normalized size	1	1.00	1.61	1.96	0.00	2.63	0.00	0.00	-0.01
time (sec)	N/A	0.158	2.496	1.692	0.000	3.346	0.000	0.000	0.000

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	92	194	0	314	0	0	-1
normalized size	1	1.00	1.01	2.13	0.00	3.45	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.295	1.500	0.000	1.226	0.000	0.000	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	431980	662	0	1050	0	0	-1
normalized size	1	1.00	2602.29	3.99	0.00	6.33	0.00	0.00	-0.01
time (sec)	N/A	0.372	39.128	2.051	0.000	18.623	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-1)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	416	416	473385	117715	0	0	0	0	-1
normalized size	1	1.00	1137.94	282.97	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.422	36.128	5.174	0.000	0.000	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	F(-1)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	653	653	654358	402966	0	0	0	0	-1
normalized size	1	1.00	1002.08	617.10	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.646	38.992	24.788	0.000	0.000	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	856	957	0	701	0	0	-1
normalized size	1	1.00	2.64	2.95	0.00	2.16	0.00	0.00	-0.00
time (sec)	N/A	0.237	6.575	1.882	0.000	34.523	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	16153	756	0	620	0	0	-1
normalized size	1	1.00	55.70	2.61	0.00	2.14	0.00	0.00	-0.00
time (sec)	N/A	0.217	27.749	1.548	0.000	12.896	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	10105	552	0	548	0	0	-1
normalized size	1	1.00	79.57	4.35	0.00	4.31	0.00	0.00	-0.01
time (sec)	N/A	0.183	26.696	1.380	0.000	3.182	0.000	0.000	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-1)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	394	394	378865	2076	0	0	0	0	-1
normalized size	1	1.00	961.59	5.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.335	35.207	1.783	0.000	0.000	0.000	0.000	0.000

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	F(-1)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	560	560	582620	164796	0	0	0	0	-1
normalized size	1	1.00	1040.39	294.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.511	38.103	5.454	0.000	0.000	0.000	0.000	0.000

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	F(-1)	F	F(-2)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	802	802	776222	480553	0	0	0	0	-1
normalized size	1	1.00	967.86	599.19	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.797	41.230	31.938	0.000	0.000	0.000	0.000	0.000

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	480	480	21194	1444	0	880	0	0	-1
normalized size	1	1.00	44.15	3.01	0.00	1.83	0.00	0.00	-0.00
time (sec)	N/A	0.316	29.390	1.898	0.000	56.607	0.000	0.000	0.000

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	A	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	468	468	16249	1133	0	782	0	0	-1
normalized size	1	1.00	34.72	2.42	0.00	1.67	0.00	0.00	-0.00
time (sec)	N/A	0.295	27.953	1.636	0.000	23.944	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	11243	824	0	670	0	0	-1
normalized size	1	1.00	68.55	5.02	0.00	4.09	0.00	0.00	-0.01
time (sec)	N/A	0.265	26.947	1.727	0.000	6.363	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-1)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	592	592	486155	3860	0	0	0	0	-1
normalized size	1	1.00	821.21	6.52	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.457	36.996	2.046	0.000	0.000	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	F(-1)	F	F(-2)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	756	756	688080	197500	0	0	0	0	-1
normalized size	1	1.00	910.16	261.24	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.634	40.037	7.791	0.000	0.000	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-1)	F(-1)	F	F(-2)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	999	999	893714	556423	0	0	0	0	-1
normalized size	1	1.00	894.61	556.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.914	43.442	44.265	0.000	0.000	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	240	1562	0	806	0	0	-1
normalized size	1	1.00	1.95	12.70	0.00	6.55	0.00	0.00	-0.01
time (sec)	N/A	0.339	18.422	2.243	0.000	1.469	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	102	189	0	206	0	0	-1
normalized size	1	1.00	1.67	3.10	0.00	3.38	0.00	0.00	-0.02
time (sec)	N/A	0.097	0.217	1.957	0.000	0.591	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	135	377	0	517	0	0	-1
normalized size	1	1.00	1.22	3.40	0.00	4.66	0.00	0.00	-0.01
time (sec)	N/A	0.357	0.960	2.046	0.000	0.601	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	184	494	0	883	0	0	-1
normalized size	1	1.00	1.30	3.50	0.00	6.26	0.00	0.00	-0.01
time (sec)	N/A	0.369	14.615	1.885	0.000	1.004	0.000	0.000	0.000

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	171	424	0	913	0	0	-1
normalized size	1	1.00	1.21	3.01	0.00	6.48	0.00	0.00	-0.01
time (sec)	N/A	0.339	0.350	2.133	0.000	1.688	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	68	113	0	250	0	278	573
normalized size	1	1.00	1.01	1.69	0.00	3.73	0.00	4.15	8.55
time (sec)	N/A	0.126	0.165	0.736	0.000	0.476	0.000	0.284	2.676

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	155	328	0	561	0	209	3763
normalized size	1	1.00	1.26	2.67	0.00	4.56	0.00	1.70	30.59
time (sec)	N/A	0.247	0.661	0.769	0.000	0.495	0.000	0.581	9.327

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	267	1063	0	1152	0	477	6909
normalized size	1	1.00	1.31	5.21	0.00	5.65	0.00	2.34	33.87
time (sec)	N/A	0.510	1.418	0.773	0.000	0.589	0.000	8.542	11.353

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	136	462	0	671	0	246	4934
normalized size	1	1.00	1.02	3.47	0.00	5.05	0.00	1.85	37.10
time (sec)	N/A	0.285	0.794	0.782	0.000	0.531	0.000	0.298	10.205

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	493	1593	0	1409	0	686	8682
normalized size	1	1.00	2.08	6.72	0.00	5.95	0.00	2.89	36.63
time (sec)	N/A	0.796	2.044	0.738	0.000	0.582	0.000	0.456	12.136

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	377	377	438	3293	0	2362	0	1253	12818
normalized size	1	1.00	1.16	8.73	0.00	6.27	0.00	3.32	34.00
time (sec)	N/A	1.999	3.451	0.802	0.000	0.731	0.000	0.465	15.074

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	517	2031	0	1629	0	852	10759
normalized size	1	1.00	2.04	8.00	0.00	6.41	0.00	3.35	42.36
time (sec)	N/A	1.132	2.303	0.723	0.000	0.680	0.000	1.609	14.496

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	412	412	459	4330	0	2776	0	1639	15647
normalized size	1	1.00	1.11	10.51	0.00	6.74	0.00	3.98	37.98
time (sec)	N/A	1.062	3.777	0.764	0.000	0.809	0.000	0.931	16.091

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	622	622	1285	8573	0	4346	0	3311	21021
normalized size	1	1.00	2.07	13.78	0.00	6.99	0.00	5.32	33.80
time (sec)	N/A	1.769	6.926	0.795	0.000	1.129	0.000	15.070	16.348

Problem 198	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	320	320	913	1372	0	0	0	0	-1
normalized size	1	1.00	2.85	4.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.283	17.935	1.944	0.000	0.794	0.000	0.000	0.000

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	225	443	0	0	0	0	-1
normalized size	1	1.00	1.02	2.01	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.244	4.591	1.693	0.000	0.000	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	380	380	6063	2337	0	0	0	0	-1
normalized size	1	1.00	15.96	6.15	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.433	24.765	1.884	0.000	1.280	0.000	0.000	0.000

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	230	581	0	0	0	0	-1
normalized size	1	1.00	0.71	1.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.361	6.308	1.704	0.000	0.000	0.000	0.000	0.000

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	442	442	7138	3285	0	0	0	0	-1
normalized size	1	1.00	16.15	7.43	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.629	25.995	2.199	0.000	1.466	0.000	0.000	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	145	215	0	0	0	0	-1
normalized size	1	1.00	0.70	1.03	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.117	2.687	1.720	0.000	1.381	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	251	318	0	0	0	0	-1
normalized size	1	1.00	1.16	1.47	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.238	8.624	1.804	0.000	0.000	0.000	0.000	0.000

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	1491	2010	0	0	0	0	-1
normalized size	1	1.00	3.97	5.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.428	14.819	1.804	0.000	0.000	0.000	0.000	0.000

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	495	495	2083	5710	0	0	0	0	-1
normalized size	1	1.00	4.21	11.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.778	17.431	1.806	0.000	1.592	0.000	0.000	0.000

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-1)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	389	389	39925	543	0	0	0	0	-1
normalized size	1	1.00	102.63	1.40	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.447	32.947	2.293	0.000	0.000	0.000	0.000	0.000

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-1)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	336	352	0	0	0	0	-1
normalized size	1	1.00	1.70	1.78	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.106	5.873	2.146	0.000	0.000	0.000	0.000	0.000

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	598	598	1708	2847	0	0	0	0	-1
normalized size	1	1.00	2.86	4.76	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.902	9.283	2.686	0.000	0.000	0.000	0.000	0.000

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	899	899	1990	15724	0	0	0	0	-1
normalized size	1	1.00	2.21	17.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.258	6.904	3.079	0.000	0.000	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	744	744	1750	4298	0	0	0	0	-1
normalized size	1	1.00	2.35	5.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.106	9.722	2.098	0.000	0.000	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	919	919	1960	13060	0	0	0	0	-1
normalized size	1	1.00	2.13	14.21	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.132	6.736	2.234	0.000	9.291	0.000	0.000	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1122	1122	2385	39420	0	0	0	0	-1
normalized size	1	1.00	2.13	35.13	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.163	7.414	3.402	0.000	8.699	0.000	0.000	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	891	891	2026	15922	0	0	0	0	-1
normalized size	1	1.00	2.27	17.87	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.009	6.726	2.296	0.000	0.000	0.000	0.000	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1150	1150	2344	32283	0	0	0	0	-1
normalized size	1	1.00	2.04	28.07	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.435	7.316	2.977	0.000	0.000	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1428	1428	2979	75468	0	0	0	0	-1
normalized size	1	1.00	2.09	52.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.438	8.285	4.944	0.000	0.000	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	C	A	F	F(-1)	F	F	F
verified	N/A	N/A	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	652	0	49385	491	0	0	0	0	-1
normalized size	1	0.00	75.74	0.75	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.093	32.785	2.103	0.000	0.000	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	325	352	0	0	0	0	-1
normalized size	1	1.00	1.64	1.78	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.111	5.536	2.129	0.000	4.521	0.000	0.000	0.000

Problem 219	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	398	398	249	292	0	0	0	0	-1
normalized size	1	1.00	0.63	0.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.437	2.372	2.152	0.000	5.836	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	622	763	1761	3451	0	0	0	0	-1
normalized size	1	1.23	2.83	5.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.316	9.642	2.361	0.000	0.000	0.000	0.000	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	89	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.191	2.367	1.601	0.000	0.000	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.092	52.113	1.327	0.000	0.000	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.091	89.285	1.263	0.000	0.000	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	89	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.220	2.613	1.448	0.000	0.000	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.097	53.308	1.270	0.000	0.000	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.096	92.805	1.366	0.000	0.000	0.000	0.000	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	89	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.218	62.593	1.344	0.000	0.000	0.000	0.000	0.000

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.097	102.048	1.270	0.000	0.000	0.000	0.000	0.000

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-1)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.097	148.174	1.317	0.000	0.000	0.000	0.000	0.000

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	2425	0	0	0	0	0	-1
normalized size	1	1.00	22.88	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.189	14.612	2.509	0.000	1.010	0.000	0.000	0.000

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	343	0	0	0	0	0	-1
normalized size	1	1.00	1.25	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.437	2.305	1.273	0.000	0.784	0.000	0.000	0.000

Problem 232	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	205	205	299	0	0	0	0	0	-1
normalized size	1	1.00	1.46	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.249	2.819	1.178	0.000	0.917	0.000	0.000	0.000

Problem 233	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	156	156	124	0	0	0	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.146	0.209	1.224	0.000	0.956	0.000	0.000	0.000

Problem 234	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	208	208	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.271	1.178	1.139	0.000	0.677	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F(-1)	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.451	10.827	1.172	0.000	0.471	0.000	0.000	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	56	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.116	2.691	1.450	0.000	0.521	0.000	0.000	0.000

Problem 237	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	296	296	278	0	0	0	0	0	-1
normalized size	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.515	1.306	0.921	0.000	0.438	0.000	0.000	0.000

Problem 238	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	211	211	200	0	0	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.242	0.542	1.050	0.000	0.467	0.000	0.000	0.000

Problem 239	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	156	156	125	0	0	0	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.144	0.240	1.049	0.000	0.452	0.000	0.000	0.000

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	5411	0	0	0	0	0	-1
normalized size	1	1.00	26.27	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.402	25.625	0.845	0.000	0.441	0.000	0.000	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	322	322	14108	0	0	0	0	0	-1
normalized size	1	1.00	43.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.559	45.375	1.000	0.000	0.488	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 [31] had the largest ratio of [.5769]

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	15	9	1.00	26	0.346
2	A	11	8	1.00	26	0.308
3	A	5	3	1.00	26	0.115
4	A	4	3	1.00	26	0.115
5	A	4	3	1.00	24	0.125
6	A	8	6	1.00	26	0.231
7	A	9	6	1.00	26	0.231
8	A	12	7	1.00	26	0.269
9	A	15	7	1.00	26	0.269
10	A	18	7	1.00	26	0.269
11	A	13	8	1.00	26	0.308
12	A	6	3	1.00	26	0.115
13	A	5	3	1.00	26	0.115

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
14	A	5	3	1.00	26	0.115
15	A	9	8	1.00	24	0.333
16	A	15	11	1.00	26	0.423
17	A	13	9	1.00	26	0.346
18	A	15	9	1.00	26	0.346
19	A	19	9	1.00	26	0.346
20	A	23	9	1.00	26	0.346
21	A	26	14	1.12	26	0.538
22	A	21	13	1.00	26	0.500
23	A	13	9	1.00	26	0.346
24	A	9	6	1.00	26	0.231
25	A	7	5	1.00	24	0.208
26	A	4	3	1.00	26	0.115
27	A	4	3	1.00	26	0.115
28	A	5	3	1.00	26	0.115
29	A	13	8	1.00	26	0.308
30	A	17	9	1.00	26	0.346
31	A	29	15	1.00	26	0.577
32	A	20	13	1.00	26	0.500
33	A	15	9	1.00	26	0.346
34	A	12	7	1.00	26	0.269
35	A	9	6	1.00	24	0.250
36	A	12	8	1.00	26	0.308
37	A	5	3	1.00	26	0.115
38	A	5	3	1.00	26	0.115
39	A	6	3	1.00	26	0.115
40	A	14	8	1.00	26	0.308
41	A	18	9	1.00	26	0.346
42	A	5	4	1.00	28	0.143
43	A	5	4	1.00	28	0.143
44	A	5	4	1.00	28	0.143
45	A	4	4	1.00	26	0.154
46	A	4	4	1.00	28	0.143
47	A	5	4	1.00	28	0.143
48	A	6	4	1.00	28	0.143
49	A	7	4	1.00	28	0.143

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
50	A	6	5	1.00	28	0.179
51	A	6	5	1.00	28	0.179
52	A	5	5	1.00	26	0.192
53	A	4	4	1.00	28	0.143
54	A	5	5	1.00	28	0.179
55	A	6	5	1.00	28	0.179
56	A	7	5	1.00	28	0.179
57	A	5	4	1.00	28	0.143
58	A	5	4	1.00	28	0.143
59	A	5	4	1.00	26	0.154
60	A	5	4	1.00	28	0.143
61	A	5	4	1.00	28	0.143
62	A	5	4	1.00	28	0.143
63	A	5	4	1.00	28	0.143
64	A	5	4	1.00	28	0.143
65	A	8	6	1.00	28	0.214
66	A	7	6	1.00	28	0.214
67	A	6	5	1.00	28	0.179
68	A	5	4	1.00	26	0.154
69	A	6	5	1.00	28	0.179
70	A	7	6	1.00	28	0.214
71	A	8	6	1.00	28	0.214
72	A	8	6	1.00	28	0.214
73	A	7	6	1.00	28	0.214
74	A	7	6	1.13	28	0.214
75	A	6	5	1.15	26	0.192
76	A	7	6	1.00	28	0.214
77	A	8	6	1.00	28	0.214
78	A	9	6	1.00	28	0.214
79	A	9	7	1.00	28	0.250
80	A	8	7	1.00	28	0.250
81	A	7	6	1.00	28	0.214
82	A	7	6	1.00	28	0.214
83	A	7	6	1.22	26	0.231
84	A	8	7	1.00	28	0.250
85	A	9	7	1.00	28	0.250

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
86	A	5	3	1.00	30	0.100
87	A	4	3	1.00	30	0.100
88	A	3	3	1.00	30	0.100
89	A	2	2	1.00	30	0.067
90	A	2	2	1.00	30	0.067
91	A	3	3	1.00	30	0.100
92	A	4	3	1.00	30	0.100
93	A	5	3	1.00	30	0.100
94	A	5	4	1.00	30	0.133
95	A	3	3	1.00	30	0.100
96	A	3	3	1.00	30	0.100
97	A	3	2	1.00	30	0.067
98	A	3	3	1.00	30	0.100
99	A	4	4	1.00	30	0.133
100	A	5	4	1.00	30	0.133
101	A	4	3	1.00	30	0.100
102	A	5	4	1.00	30	0.133
103	A	4	3	1.00	30	0.100
104	A	3	2	1.00	30	0.067
105	A	3	3	1.00	30	0.100
106	A	3	3	1.00	30	0.100
107	A	4	4	1.00	30	0.133
108	A	5	4	1.00	30	0.133
109	A	6	4	1.00	30	0.133
110	A	3	2	1.00	30	0.067
111	A	3	2	1.00	30	0.067
112	A	3	2	1.00	30	0.067
113	A	2	2	1.00	30	0.067
114	A	2	2	1.00	30	0.067
115	A	3	2	1.29	30	0.067
116	A	3	2	1.00	30	0.067
117	A	3	2	1.00	30	0.067
118	A	3	3	1.00	30	0.100
119	A	3	3	1.00	30	0.100
120	A	3	3	1.00	30	0.100
121	A	3	2	1.00	30	0.067

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
122	A	3	3	1.00	30	0.100
123	A	3	2	1.00	30	0.067
124	A	3	2	1.00	30	0.067
125	A	3	3	1.00	30	0.100
126	A	4	4	1.00	30	0.133
127	A	4	3	1.00	30	0.100
128	A	3	2	1.00	30	0.067
129	A	3	2	1.00	30	0.067
130	A	4	3	1.00	30	0.100
131	A	2	2	1.00	24	0.083
132	A	3	3	1.00	26	0.115
133	A	3	3	1.00	26	0.115
134	A	3	3	1.00	26	0.115
135	A	3	3	1.00	24	0.125
136	A	3	3	1.00	26	0.115
137	A	3	3	1.00	26	0.115
138	A	4	3	1.00	28	0.107
139	A	3	3	1.00	28	0.107
140	A	2	2	1.00	28	0.071
141	A	4	4	1.00	28	0.143
142	A	5	5	1.00	28	0.179
143	A	6	5	1.00	27	0.185
144	A	3	3	1.00	27	0.111
145	A	3	3	1.00	27	0.111
146	A	5	5	1.00	27	0.185
147	A	5	4	1.00	27	0.148
148	A	5	4	1.00	27	0.148
149	A	5	4	1.00	27	0.148
150	A	4	4	1.00	25	0.160
151	A	5	5	1.00	27	0.185
152	A	7	6	1.00	27	0.222
153	A	8	7	1.00	27	0.259
154	A	6	5	1.00	27	0.185
155	A	5	5	1.00	27	0.185
156	A	5	5	1.00	25	0.200
157	A	5	5	1.00	27	0.185

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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
158	A	7	6	1.00	27	0.222
159	A	8	6	1.00	27	0.222
160	A	5	4	1.00	27	0.148
161	A	5	4	1.00	27	0.148
162	A	6	5	1.00	25	0.200
163	A	7	5	1.00	27	0.185
164	A	10	6	1.00	27	0.222
165	A	14	6	1.00	27	0.222
166	A	9	5	1.00	27	0.185
167	A	7	4	1.00	27	0.148
168	A	5	4	1.00	25	0.160
169	A	8	7	1.00	27	0.259
170	A	12	6	1.00	27	0.222
171	A	16	6	1.00	27	0.222
172	A	10	5	1.00	27	0.185
173	A	10	5	1.00	27	0.185
174	A	6	5	1.00	25	0.200
175	A	12	6	1.00	27	0.222
176	A	15	6	1.00	27	0.222
177	A	19	6	1.00	27	0.222
178	A	14	5	1.00	27	0.185
179	A	14	5	1.00	27	0.185
180	A	7	5	1.00	25	0.200
181	A	16	6	1.00	27	0.222
182	A	19	6	1.00	27	0.222
183	A	23	6	1.00	27	0.222
184	A	5	5	1.00	29	0.172
185	A	2	2	1.00	29	0.069
186	A	5	5	1.00	29	0.172
187	A	5	4	1.00	29	0.138
188	A	5	4	1.00	29	0.138
189	A	4	4	1.00	23	0.174
190	A	5	5	1.00	23	0.217
191	A	6	6	1.00	23	0.261
192	A	5	5	1.00	25	0.200
193	A	6	6	1.00	25	0.240

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
194	A	7	7	1.00	25	0.280
195	A	6	6	1.00	25	0.240
196	A	7	7	1.00	25	0.280
197	A	8	8	1.00	25	0.320
198	A	5	5	1.00	25	0.200
199	A	3	3	1.00	27	0.111
200	A	6	6	1.00	25	0.240
201	A	5	5	1.00	27	0.185
202	A	7	7	1.00	25	0.280
203	A	3	3	1.00	25	0.120
204	A	3	3	1.00	27	0.111
205	A	6	6	1.00	25	0.240
206	A	7	7	1.00	25	0.280
207	A	3	3	1.00	29	0.103
208	A	1	1	1.00	29	0.034
209	A	5	5	1.00	29	0.172
210	A	7	7	1.00	29	0.241
211	A	6	6	1.00	29	0.207
212	A	7	7	1.00	29	0.241
213	A	8	8	1.00	29	0.276
214	A	7	7	1.00	29	0.241
215	A	8	8	1.00	29	0.276
216	A	9	8	1.00	29	0.276
217	F	0	0	N/A	0	N/A
218	A	1	1	1.00	29	0.034
219	A	3	3	1.00	29	0.103
220	A	6	6	1.23	29	0.207
221	A	0	0	0.00	0	0.000
222	A	0	0	0.00	0	0.000
223	A	0	0	0.00	0	0.000
224	A	0	0	0.00	0	0.000
225	A	0	0	0.00	0	0.000
226	A	0	0	0.00	0	0.000
227	A	0	0	0.00	0	0.000
228	A	0	0	0.00	0	0.000
229	A	0	0	0.00	0	0.000

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
230	A	4	4	1.00	27	0.148
231	A	8	6	1.00	27	0.222
232	A	7	5	1.00	27	0.185
233	A	6	4	1.00	25	0.160
234	A	7	5	1.00	27	0.185
235	A	8	6	1.00	27	0.222
236	A	0	0	0.00	0	0.000
237	A	8	6	1.00	27	0.222
238	A	7	5	1.00	27	0.185
239	A	6	4	1.00	25	0.160
240	A	7	5	1.00	27	0.185
241	A	10	5	1.00	27	0.185

Chapter 3

Listing of integrals

3.1 $\int (a + a\sec(e + fx))^2(c - c\sec(e + fx))^5\, dx$

Optimal. Leaf size=196

$$\frac{3a^2c^5\tan^5(e+fx)}{5f}+\frac{a^2c^5\tan^3(e+fx)}{3f}-\frac{a^2c^5\tan(e+fx)}{f}-\frac{19a^2c^5\tanh^{-1}(\sin(e+fx))}{16f}-\frac{a^2c^5\tan^3(e+fx)\sec^3(}{6f}$$

```
[Out] a^2*c^5*x-19/16*a^2*c^5*arctanh(sin(f*x+e))/f-a^2*c^5*tan(f*x+e)/f+17/16*a^
2*c^5*sec(f*x+e)*tan(f*x+e)/f+1/8*a^2*c^5*sec(f*x+e)^3*tan(f*x+e)/f+1/3*a^2
*c^5*tan(f*x+e)^3/f-3/4*a^2*c^5*sec(f*x+e)*tan(f*x+e)^3/f-1/6*a^2*c^5*sec(f
*x+e)^3*tan(f*x+e)^3/f+3/5*a^2*c^5*tan(f*x+e)^5/f
```

Rubi [A] time = 0.30, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3904, 3886, 3473, 8, 2611, 3770, 2607, 30, 3768}

$$\frac{3a^2c^5\tan^5(e+fx)}{5f}+\frac{a^2c^5\tan^3(e+fx)}{3f}-\frac{a^2c^5\tan(e+fx)}{f}-\frac{19a^2c^5\tanh^{-1}(\sin(e+fx))}{16f}-\frac{a^2c^5\tan^3(e+fx)\sec^3(}{6f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^5,x]
```

```
[Out] a^2*c^5*x - (19*a^2*c^5*ArcTanh[Sin[e + f*x]])/(16*f) - (a^2*c^5*Tan[e + f*
x])/f + (17*a^2*c^5*Sec[e + f*x]*Tan[e + f*x])/(16*f) + (a^2*c^5*Sec[e + f*
x]^3*Tan[e + f*x])/(8*f) + (a^2*c^5*Tan[e + f*x]^3)/(3*f) - (3*a^2*c^5*Sec[
e + f*x]*Tan[e + f*x]^3)/(4*f) - (a^2*c^5*Sec[e + f*x]^3*Tan[e + f*x]^3)/(6
*f) + (3*a^2*c^5*Tan[e + f*x]^5)/(5*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[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])
```

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 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 3768

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

Rule 3770

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

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^5\,dx = \left(a^2c^2\right)\int (c-c\sec(e+fx))^3\tan^4(e+fx)\,dx$$

$$= \left(a^2c^2\right)\int \left(c^3\tan^4(e+fx) - 3c^3\sec(e+fx)\tan^4(e+fx) + 3c^3\mathrm{sec}\right.$$

$$= \left(a^2c^5\right)\int \tan^4(e+fx)\,dx - \left(a^2c^5\right)\int \sec^3(e+fx)\tan^4(e+fx)\,dx$$

$$= \frac{a^2c^5\tan^3(e+fx)}{3f} - \frac{3a^2c^5\sec(e+fx)\tan^3(e+fx)}{4f} - \frac{a^2c^5\sec^3(e}{}$$

$$= -\frac{a^2c^5\tan(e+fx)}{f} + \frac{9a^2c^5\sec(e+fx)\tan(e+fx)}{8f} + \frac{a^2c^5\sec^3(e}{}$$

$$= a^2c^5x - \frac{9a^2c^5\tanh^{-1}(\sin(e+fx))}{8f} - \frac{a^2c^5\tan(e+fx)}{f} + \frac{17a^2c^5\mathrm{se}}{}$$

$$= a^2c^5x - \frac{19a^2c^5\tanh^{-1}(\sin(e+fx))}{16f} - \frac{a^2c^5\tan(e+fx)}{f} + \frac{17a^2c^5\mathrm{s}}{}$$

Mathematica [A] time = 2.13, size = 165, normalized size = 0.84

$$\frac{a^2c^5\sec^6(e+fx)\left(-210\sin(e+fx)-120\sin(2(e+fx))+865\sin(3(e+fx))-768\sin(4(e+fx))+435\sin(\ldots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (a^2*c^5*Sec[e + f*x]^6*(1200*e + 1200*f*x - 4560*ArcTanh[Sin[e + f*x]]*Cos
[e + f*x]^6 + 1800*(e + f*x)*Cos[2*(e + f*x)] + 720*e*Cos[4*(e + f*x)] + 72
0*f*x*Cos[4*(e + f*x)] + 120*e*Cos[6*(e + f*x)] + 120*f*x*Cos[6*(e + f*x)]
- 210*Sin[e + f*x] - 120*Sin[2*(e + f*x)] + 865*Sin[3*(e + f*x)] - 768*Sin[
4*(e + f*x)] + 435*Sin[5*(e + f*x)] - 88*Sin[6*(e + f*x)]))/(3840*f)
```

fricas [A] time = 0.46, size = 179, normalized size = 0.91

$$\frac{480\,a^2c^5fx\cos\left(fx+e\right)^6-285\,a^2c^5\cos\left(fx+e\right)^6\log\left(\sin\left(fx+e\right)+1\right)+285\,a^2c^5\cos\left(fx+e\right)^6\log\left(-\sin\left(\ldots\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] 1/480*(480*a^2*c^5*f*x*cos(f*x + e)^6 - 285*a^2*c^5*cos(f*x + e)^6*log(sin(
f*x + e) + 1) + 285*a^2*c^5*cos(f*x + e)^6*log(-sin(f*x + e) + 1) - 2*(176*
a^2*c^5*cos(f*x + e)^5 - 435*a^2*c^5*cos(f*x + e)^4 + 208*a^2*c^5*cos(f*x +
 e)^3 + 110*a^2*c^5*cos(f*x + e)^2 - 144*a^2*c^5*cos(f*x + e) + 40*a^2*c^5)
*sin(f*x + e))/(f*cos(f*x + e)^6)
```

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((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^5,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*(-2*a^2*c^5/2*(f*x+exp(1))/2-19*a^2*c^5/32*ln(abs(tan((f*x+exp
(1))/2)-1))+19*a^2*c^5/32*ln(abs(tan((f*x+exp(1))/2)+1))-(525*tan((f*x+exp(
1))/2)^11*a^2*c^5-3135*tan((f*x+exp(1))/2)^9*a^2*c^5+1746*tan((f*x+exp(1))/
2)^7*a^2*c^5-366*tan((f*x+exp(1))/2)^5*a^2*c^5-95*tan((f*x+exp(1))/2)^3*a^2
*c^5+45*tan((f*x+exp(1))/2)*a^2*c^5)*1/240/(tan((f*x+exp(1))/2)^2-1)^6)
```

maple [A] time = 1.58, size = 186, normalized size = 0.95

$$-\frac{11a^2c^5\left(\sec^3\left(fx+e\right)\right)\tan\left(fx+e\right)}{24f}+\frac{29a^2c^5\sec\left(fx+e\right)\tan\left(fx+e\right)}{16f}-\frac{19c^5a^2\ln\left(\sec\left(fx+e\right)+\tan\left(fx+e\ldots\right.\right.}{16f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^5,x)
```

```
[Out] -11/24*a^2*c^5*sec(f*x+e)^3*tan(f*x+e)/f+29/16*a^2*c^5*sec(f*x+e)*tan(f*x+e
)/f-19/16/f*c^5*a^2*ln(sec(f*x+e)+tan(f*x+e))-11/15*a^2*c^5*tan(f*x+e)/f-13
/15/f*c^5*a^2*tan(f*x+e)*sec(f*x+e)^2+a^2*c^5*x+1/f*a^2*c^5*e+3/5/f*c^5*a^2
*tan(f*x+e)*sec(f*x+e)^4-1/6/f*c^5*a^2*tan(f*x+e)*sec(f*x+e)^5
```

maxima [A] time = 0.35, size = 334, normalized size = 1.70

$$96\left(3\tan\left(fx+e\right)^{5}+10\tan\left(fx+e\right)^{3}+15\tan\left(fx+e\right)\right)a^{2}c^{5}-800\left(\tan\left(fx+e\right)^{3}+3\tan\left(fx+e\right)\right)a^{2}c^{5}+480$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] 1/480*(96*(3*tan(f*x + e)^5 + 10*tan(f*x + e)^3 + 15*tan(f*x + e))*a^2*c^5
- 800*(tan(f*x + e)^3 + 3*tan(f*x + e))*a^2*c^5 + 480*(f*x + e)*a^2*c^5 + 5
*a^2*c^5*(2*(15*sin(f*x + e)^5 - 40*sin(f*x + e)^3 + 33*sin(f*x + e))/(sin(
f*x + e)^6 - 3*sin(f*x + e)^4 + 3*sin(f*x + e)^2 - 1) - 15*log(sin(f*x + e)
 + 1) + 15*log(sin(f*x + e) - 1)) + 30*a^2*c^5*(2*(3*sin(f*x + e)^3 - 5*sin
(f*x + e))/(sin(f*x + e)^4 - 2*sin(f*x + e)^2 + 1) - 3*log(sin(f*x + e) + 1
) + 3*log(sin(f*x + e) - 1)) - 600*a^2*c^5*(2*sin(f*x + e)/(sin(f*x + e)^2
- 1) - log(sin(f*x + e) + 1) + log(sin(f*x + e) - 1)) - 1440*a^2*c^5*log(se
c(f*x + e) + tan(f*x + e)) + 480*a^2*c^5*tan(f*x + e))/f
```

mupad [B] time = 2.53, size = 228, normalized size = 1.16

$$a^2\,c^5\,x-\frac{-\frac{35\,a^2\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{11}}{8}+\frac{209\,a^2\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{9}}{8}-\frac{291\,a^2\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{7}}{20}+\frac{61\,a^2\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{5}}{20}+\frac{19\,a^2\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{3}}{24}-\frac{3\,a^2}{}}{f\,\left({\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{12}-6\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{10}+15\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{8}-20\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{6}+15\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{4}-6\,\tan\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^5,x)
```

```
[Out] a^2*c^5*x - ((19*a^2*c^5*tan(e/2 + (f*x)/2)^3)/24 + (61*a^2*c^5*tan(e/2 + (
f*x)/2)^5)/20 - (291*a^2*c^5*tan(e/2 + (f*x)/2)^7)/20 + (209*a^2*c^5*tan(e/
2 + (f*x)/2)^9)/8 - (35*a^2*c^5*tan(e/2 + (f*x)/2)^11)/8 - (3*a^2*c^5*tan(e
/2 + (f*x)/2))/8)/(f*(15*tan(e/2 + (f*x)/2)^4 - 6*tan(e/2 + (f*x)/2)^2 - 20
*tan(e/2 + (f*x)/2)^6 + 15*tan(e/2 + (f*x)/2)^8 - 6*tan(e/2 + (f*x)/2)^10 +
 tan(e/2 + (f*x)/2)^12 + 1)) - (19*a^2*c^5*atanh(tan(e/2 + (f*x)/2)))/(8*f)
```

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

$$-a^{2}c^{5}\left(\int(-1)\,dx+\int3\sec\left(e+fx\right)dx+\int\left(-\sec^{2}\left(e+fx\right)\right)dx+\int\left(-5\sec^{3}\left(e+fx\right)\right)dx+\int5\sec^{4}\left(e+fx\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2*(c-c*sec(f*x+e))**5,x)
```

```
[Out] -a**2*c**5*(Integral(-1, x) + Integral(3*sec(e + f*x), x) + Integral(-sec(e
 + f*x)**2, x) + Integral(-5*sec(e + f*x)**3, x) + Integral(5*sec(e + f*x)*
*4, x) + Integral(sec(e + f*x)**5, x) + Integral(-3*sec(e + f*x)**6, x) + I
ntegral(sec(e + f*x)**7, x))
```

3.2 $\int (a + a\sec(e + fx))^2 (c - c\sec(e + fx))^4 \, dx$

Optimal. Leaf size=140

$$\frac{a^2c^4\tan^5(e+fx)}{5f}+\frac{a^2c^4\tan^3(e+fx)}{3f}-\frac{a^2c^4\tan(e+fx)}{f}-\frac{3a^2c^4\tanh^{-1}(\sin(e+fx))}{4f}-\frac{a^2c^4\tan^3(e+fx)\sec(e+}{2f}$$

```
[Out] a^2*c^4*x-3/4*a^2*c^4*arctanh(sin(f*x+e))/f-a^2*c^4*tan(f*x+e)/f+3/4*a^2*c^
4*sec(f*x+e)*tan(f*x+e)/f+1/3*a^2*c^4*tan(f*x+e)^3/f-1/2*a^2*c^4*sec(f*x+e)
*tan(f*x+e)^3/f+1/5*a^2*c^4*tan(f*x+e)^5/f
```

Rubi [A] time = 0.20, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {3904, 3886, 3473, 8, 2611, 3770, 2607, 30}

$$\frac{a^2c^4\tan^5(e+fx)}{5f}+\frac{a^2c^4\tan^3(e+fx)}{3f}-\frac{a^2c^4\tan(e+fx)}{f}-\frac{3a^2c^4\tanh^{-1}(\sin(e+fx))}{4f}-\frac{a^2c^4\tan^3(e+fx)\sec(e+}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^4,x]
```

```
[Out] a^2*c^4*x - (3*a^2*c^4*ArcTanh[Sin[e + f*x]])/(4*f) - (a^2*c^4*Tan[e + f*x]
)/f + (3*a^2*c^4*Sec[e + f*x]*Tan[e + f*x])/(4*f) + (a^2*c^4*Tan[e + f*x]^3
)/(3*f) - (a^2*c^4*Sec[e + f*x]*Tan[e + f*x]^3)/(2*f) + (a^2*c^4*Tan[e + f*
x]^5)/(5*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[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])
```

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 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 3770

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

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^4\,dx &= \left(a^2c^2\right)\int (c-c\sec(e+fx))^2\tan^4(e+fx)\,dx \\
&= \left(a^2c^2\right)\int \left(c^2\tan^4(e+fx)-2c^2\sec(e+fx)\tan^4(e+fx)+c^2\sec^2 \right. \\
&= \left(a^2c^4\right)\int \tan^4(e+fx)\,dx+\left(a^2c^4\right)\int \sec^2(e+fx)\tan^4(e+fx)\,dx \\
&= \frac{a^2c^4\tan^3(e+fx)}{3f}-\frac{a^2c^4\sec(e+fx)\tan^3(e+fx)}{2f}-\left(a^2c^4\right)\int \tan \\
&= -\frac{a^2c^4\tan(e+fx)}{f}+\frac{3a^2c^4\sec(e+fx)\tan(e+fx)}{4f}+\frac{a^2c^4\tan^3(e}{3f} \\
&= a^2c^4x-\frac{3a^2c^4\tanh^{-1}(\sin(e+fx))}{4f}-\frac{a^2c^4\tan(e+fx)}{f}+\frac{3a^2c^4\sec}{}
\end{aligned}$$

Mathematica [A] time = 1.17, size = 146, normalized size = 1.04

$$\frac{a^2c^4\sec^5(e+fx)\left(40\sin(e+fx)+60\sin(2(e+fx))-220\sin(3(e+fx))+150\sin(4(e+fx))-68\sin(5(e+fx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (a^2*c^4*Sec[e + f*x]^5*(600*(e + f*x)*Cos[e + f*x] - 720*ArcTanh[Sin[e + f
*x]]*Cos[e + f*x]^5 + 300*e*Cos[3*(e + f*x)] + 300*f*x*Cos[3*(e + f*x)] + 6
0*e*Cos[5*(e + f*x)] + 60*f*x*Cos[5*(e + f*x)] + 40*Sin[e + f*x] + 60*Sin[2
*(e + f*x)] - 220*Sin[3*(e + f*x)] + 150*Sin[4*(e + f*x)] - 68*Sin[5*(e + f
*x)]))/(960*f)
```

fricas [A] time = 0.52, size = 163, normalized size = 1.16

$$\frac{120\,a^2c^4fx\cos\left(fx+e\right)^5-45\,a^2c^4\cos\left(fx+e\right)^5\log\left(\sin\left(fx+e\right)+1\right)+45\,a^2c^4\cos\left(fx+e\right)^5\log\left(-\sin\left(fx+e\right.\right.}{120}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] 1/120*(120*a^2*c^4*f*x*cos(f*x + e)^5 - 45*a^2*c^4*cos(f*x + e)^5*log(sin(f
*x + e) + 1) + 45*a^2*c^4*cos(f*x + e)^5*log(-sin(f*x + e) + 1) - 2*(68*a^2
*c^4*cos(f*x + e)^4 - 75*a^2*c^4*cos(f*x + e)^3 + 4*a^2*c^4*cos(f*x + e)^2
+ 30*a^2*c^4*cos(f*x + e) - 12*a^2*c^4)*sin(f*x + e))/(f*cos(f*x + e)^5)
```

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((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)2/f*(2*a^2*c^4/2*(f*x+exp(1))/2+3*a^2*c^4/8*ln(abs(tan((f*x+exp(1))
/2)-1))-3*a^2*c^4/8*ln(abs(tan((f*x+exp(1))/2)+1))-(-105*tan((f*x+exp(1))/2
)^9*a^2*c^4+530*tan((f*x+exp(1))/2)^7*a^2*c^4-328*tan((f*x+exp(1))/2)^5*a^2
*c^4+110*tan((f*x+exp(1))/2)^3*a^2*c^4-15*tan((f*x+exp(1))/2)*a^2*c^4)*1/60
/(tan((f*x+exp(1))/2)^2-1)^5)
```

maple [A] time = 1.41, size = 161, normalized size = 1.15

$$-\frac{17a^2c^4\tan\left(fx+e\right)}{15f}-\frac{a^2c^4\tan\left(fx+e\right)\left(\sec^2\left(fx+e\right)\right)}{15f}+\frac{5a^2c^4\sec\left(fx+e\right)\tan\left(fx+e\right)}{4f}-\frac{3a^2c^4\ln\left(\sec\left(fx+\right.\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^4,x)
```

```
[Out] -17/15*a^2*c^4*tan(f*x+e)/f-1/15/f*a^2*c^4*tan(f*x+e)*sec(f*x+e)^2+5/4*a^2*
c^4*sec(f*x+e)*tan(f*x+e)/f-3/4/f*a^2*c^4*ln(sec(f*x+e)+tan(f*x+e))+a^2*c^4
*x+1/f*a^2*c^4*e-1/2/f*a^2*c^4*tan(f*x+e)*sec(f*x+e)^3+1/5/f*a^2*c^4*tan(f*
x+e)*sec(f*x+e)^4
```

maxima [A] time = 0.34, size = 240, normalized size = 1.71

$$\frac{8\left(3\tan\left(fx+e\right)^5+10\tan\left(fx+e\right)^3+15\tan\left(fx+e\right)\right)a^2c^4-40\left(\tan\left(fx+e\right)^3+3\tan\left(fx+e\right)\right)a^2c^4+120}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] 1/120*(8*(3*tan(f*x + e)^5 + 10*tan(f*x + e)^3 + 15*tan(f*x + e))*a^2*c^4 -
 40*(tan(f*x + e)^3 + 3*tan(f*x + e))*a^2*c^4 + 120*(f*x + e)*a^2*c^4 + 15*
a^2*c^4*(2*(3*sin(f*x + e)^3 - 5*sin(f*x + e))/(sin(f*x + e)^4 - 2*sin(f*x
+ e)^2 + 1) - 3*log(sin(f*x + e) + 1) + 3*log(sin(f*x + e) - 1)) - 120*a^2*
c^4*(2*sin(f*x + e)/(sin(f*x + e)^2 - 1) - log(sin(f*x + e) + 1) + log(sin(
f*x + e) - 1)) - 240*a^2*c^4*log(sec(f*x + e) + tan(f*x + e)) - 120*a^2*c^4
*tan(f*x + e))/f
```

mupad [B] time = 2.30, size = 195, normalized size = 1.39

$$a^2\,c^4\,x+\frac{\frac{7\,a^2\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^9}{2}-\frac{53\,a^2\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^7}{3}+\frac{164\,a^2\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{15}-\frac{11\,a^2\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{3}+\frac{a^2\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{2}}{f\,\left({\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{10}-5\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^8+10\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^6-10\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^4+5\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^2-1\right)}-\frac{3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^4,x)
```

```
[Out] a^2*c^4*x + ((164*a^2*c^4*tan(e/2 + (f*x)/2)^5)/15 - (11*a^2*c^4*tan(e/2 +
(f*x)/2)^3)/3 - (53*a^2*c^4*tan(e/2 + (f*x)/2)^7)/3 + (7*a^2*c^4*tan(e/2 +
(f*x)/2)^9)/2 + (a^2*c^4*tan(e/2 + (f*x)/2))/2)/(f*(5*tan(e/2 + (f*x)/2)^2
- 10*tan(e/2 + (f*x)/2)^4 + 10*tan(e/2 + (f*x)/2)^6 - 5*tan(e/2 + (f*x)/2)^
8 + tan(e/2 + (f*x)/2)^10 - 1)) - (3*a^2*c^4*atanh(tan(e/2 + (f*x)/2)))/(2*
f)
```

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

$$a^2c^4\left(\int 1\,dx+\int\left(-2\sec\left(e+fx\right)\right)dx+\int\left(-\sec^2\left(e+fx\right)\right)dx+\int 4\sec^3\left(e+fx\right)dx+\int\left(-\sec^4\left(e+fx\right)\right)d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2*(c-c*sec(f*x+e))**4,x)
```

```
[Out] a**2*c**4*(Integral(1, x) + Integral(-2*sec(e + f*x), x) + Integral(-sec(e
+ f*x)**2, x) + Integral(4*sec(e + f*x)**3, x) + Integral(-sec(e + f*x)**4,
 x) + Integral(-2*sec(e + f*x)**5, x) + Integral(sec(e + f*x)**6, x))
```

3.3 $\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^3\,dx$

Optimal. Leaf size=97

$$-\frac{3a^2c^3\tanh^{-1}(\sin(e+fx))}{8f}+\frac{a^2\tan^3(e+fx)\left(4c^3-3c^3\sec(e+fx)\right)}{12f}-\frac{a^2\tan(e+fx)\left(8c^3-3c^3\sec(e+fx)\right)}{8f}+$$

```
[Out] a^2*c^3*x-3/8*a^2*c^3*arctanh(sin(f*x+e))/f-1/8*a^2*(8*c^3-3*c^3*sec(f*x+e)
)*tan(f*x+e)/f+1/12*a^2*(4*c^3-3*c^3*sec(f*x+e))*tan(f*x+e)^3/f
```

Rubi [A] time = 0.12, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {3904, 3881, 3770}

$$-\frac{3a^2c^3\tanh^{-1}(\sin(e+fx))}{8f}+\frac{a^2\tan^3(e+fx)\left(4c^3-3c^3\sec(e+fx)\right)}{12f}-\frac{a^2\tan(e+fx)\left(8c^3-3c^3\sec(e+fx)\right)}{8f}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] a^2*c^3*x - (3*a^2*c^3*ArcTanh[Sin[e + f*x]])/(8*f) - (a^2*(8*c^3 - 3*c^3*S
ec[e + f*x])*Tan[e + f*x])/(8*f) + (a^2*(4*c^3 - 3*c^3*Sec[e + f*x])*Tan[e
+ f*x]^3)/(12*f)
```

Rule 3770

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

Rule 3881

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[(e*(e*Cot[c + d*x])^(m - 1)*(a*m + b*(m - 1)*Csc[c
 + d*x]))/(d*m*(m - 1)), x] - Dist[e^2/m, Int[(e*Cot[c + d*x])^(m - 2)*(a*m
 + b*(m - 1)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && GtQ[m, 1
]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^3\,dx = \left(a^2c^2\right)\int (c-c\sec(e+fx))\tan^4(e+fx)\,dx$$
$$= \frac{a^2\left(4c^3-3c^3\sec(e+fx)\right)\tan^3(e+fx)}{12f} - \frac{1}{4}\left(a^2c^2\right)\int (4c-3c\sec($$
$$= -\frac{a^2\left(8c^3-3c^3\sec(e+fx)\right)\tan(e+fx)}{8f} + \frac{a^2\left(4c^3-3c^3\sec(e+f\right.}{12f}$$
$$= a^2c^3x - \frac{a^2\left(8c^3-3c^3\sec(e+fx)\right)\tan(e+fx)}{8f} + \frac{a^2\left(4c^3-3c^3\sec\right.}{}$$
$$= a^2c^3x - \frac{3a^2c^3\tanh^{-1}(\sin(e+fx))}{8f} - \frac{a^2\left(8c^3-3c^3\sec(e+fx)\right)\text{ta}}{8f}$$

Mathematica [**A**] time = 0.73, size = 122, normalized size = 1.26

$$\frac{a^2c^3\sec^4(e+fx)\left(-18\sin(e+fx)-32\sin(2(e+fx))+30\sin(3(e+fx))-32\sin(4(e+fx))+96(e+fx)\cos(2\right.}{192f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (a^2*c^3*Sec[e + f*x]^4*(72*e + 72*f*x - 72*ArcTanh[Sin[e + f*x]]*Cos[e + f
*x]^4 + 96*(e + f*x)*Cos[2*(e + f*x)] + 24*e*Cos[4*(e + f*x)] + 24*f*x*Cos[
4*(e + f*x)] - 18*Sin[e + f*x] - 32*Sin[2*(e + f*x)] + 30*Sin[3*(e + f*x)]
- 32*Sin[4*(e + f*x)]))/(192*f)
```

fricas [**A**] time = 0.49, size = 147, normalized size = 1.52

$$\frac{48\,a^2c^3fx\cos\left(fx+e\right)^4 - 9\,a^2c^3\cos\left(fx+e\right)^4\log\left(\sin\left(fx+e\right)+1\right) + 9\,a^2c^3\cos\left(fx+e\right)^4\log\left(-\sin\left(fx+e\right)+\right.}{48\,f\cos\left(fx+e\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/48*(48*a^2*c^3*f*x*cos(f*x + e)^4 - 9*a^2*c^3*cos(f*x + e)^4*log(sin(f*x
+ e) + 1) + 9*a^2*c^3*cos(f*x + e)^4*log(-sin(f*x + e) + 1) - 2*(32*a^2*c^3
*cos(f*x + e)^3 - 15*a^2*c^3*cos(f*x + e)^2 - 8*a^2*c^3*cos(f*x + e) + 6*a^
2*c^3)*sin(f*x + e))/(f*cos(f*x + e)^4)
```

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((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*(-2*a^2*c^3/2*(f*x+exp(1))/2-3*a^2*c^3/16*ln(abs(tan((f*x+exp(
1))/2)-1))+3*a^2*c^3/16*ln(abs(tan((f*x+exp(1))/2)+1))+(-33*tan((f*x+exp(1)
)/2)^7*a^2*c^3+137*tan((f*x+exp(1))/2)^5*a^2*c^3-71*tan((f*x+exp(1))/2)^3*a
^2*c^3+15*tan((f*x+exp(1))/2)*a^2*c^3)*1/24/(tan((f*x+exp(1))/2)^2-1)^4)
```

maple [A] time = 1.22, size = 136, normalized size = 1.40

$$\frac{5c^3a^2\sec\left(fx+e\right)\tan\left(fx+e\right)}{8f}-\frac{3c^3a^2\ln\left(\sec\left(fx+e\right)+\tan\left(fx+e\right)\right)}{8f}-\frac{4a^2c^3\tan\left(fx+e\right)}{3f}+a^2c^3x+\frac{a^2c^3e}{f}+\frac{c^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^3,x)
```

```
[Out] 5/8/f*c^3*a^2*sec(f*x+e)*tan(f*x+e)-3/8/f*c^3*a^2*ln(sec(f*x+e)+tan(f*x+e))
-4/3*a^2*c^3*tan(f*x+e)/f+a^2*c^3*x+1/f*a^2*c^3*e+1/3/f*c^3*a^2*tan(f*x+e)*
sec(f*x+e)^2-1/4/f*c^3*a^2*tan(f*x+e)*sec(f*x+e)^3
```

maxima [B] time = 0.33, size = 203, normalized size = 2.09

$$\frac{16\left(\tan\left(fx+e\right)^3+3\tan\left(fx+e\right)\right)a^2c^3+48\left(fx+e\right)a^2c^3+3a^2c^3\left(\frac{2\left(3\sin\left(fx+e\right)^3-5\sin\left(fx+e\right)\right)}{\sin\left(fx+e\right)^4-2\sin\left(fx+e\right)^2+1}-3\log\left(\sin\left(fx\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] 1/48*(16*(tan(f*x + e)^3 + 3*tan(f*x + e))*a^2*c^3 + 48*(f*x + e)*a^2*c^3 +
 3*a^2*c^3*(2*(3*sin(f*x + e)^3 - 5*sin(f*x + e))/(sin(f*x + e)^4 - 2*sin(f
*x + e)^2 + 1) - 3*log(sin(f*x + e) + 1) + 3*log(sin(f*x + e) - 1)) - 24*a^
2*c^3*(2*sin(f*x + e)/(sin(f*x + e)^2 - 1) - log(sin(f*x + e) + 1) + log(si
n(f*x + e) - 1)) - 48*a^2*c^3*log(sec(f*x + e) + tan(f*x + e)) - 96*a^2*c^3
*tan(f*x + e))/f
```

mupad [B] time = 2.19, size = 163, normalized size = 1.68

$$\frac{\frac{11\,a^2\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^7}{4}-\frac{137\,a^2\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{12}+\frac{71\,a^2\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{12}-\frac{5\,a^2\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{4}}{f\,\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^8-4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6+6\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4-4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2+1\right)}+a^2\,c^3\,x-\frac{3\,a^2\,c^3\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\right.\right.}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^3,x)
```

```
[Out] ((71*a^2*c^3*tan(e/2 + (f*x)/2)^3)/12 - (137*a^2*c^3*tan(e/2 + (f*x)/2)^5)/
12 + (11*a^2*c^3*tan(e/2 + (f*x)/2)^7)/4 - (5*a^2*c^3*tan(e/2 + (f*x)/2))/4
)/(f*(6*tan(e/2 + (f*x)/2)^4 - 4*tan(e/2 + (f*x)/2)^2 - 4*tan(e/2 + (f*x)/2
)^6 + tan(e/2 + (f*x)/2)^8 + 1)) + a^2*c^3*x - (3*a^2*c^3*atanh(tan(e/2 + (
f*x)/2)))/(4*f)
```

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

$$-a^2c^3\left(\int(-1)\,dx+\int\sec\left(e+fx\right)dx+\int 2\sec^2\left(e+fx\right)dx+\int\left(-2\sec^3\left(e+fx\right)\right)dx+\int\left(-\sec^4\left(e+fx\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2*(c-c*sec(f*x+e))**3,x)
```

```
[Out] -a**2*c**3*(Integral(-1, x) + Integral(sec(e + f*x), x) + Integral(2*sec(e
+ f*x)**2, x) + Integral(-2*sec(e + f*x)**3, x) + Integral(-sec(e + f*x)**4
, x) + Integral(sec(e + f*x)**5, x))
```

3.4 $\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^2\,dx$

Optimal. Leaf size=47

$$\frac{a^2c^2\tan^3(e+fx)}{3f}-\frac{a^2c^2\tan(e+fx)}{f}+a^2c^2x$$

```
[Out] a^2*c^2*x-a^2*c^2*tan(f*x+e)/f+1/3*a^2*c^2*tan(f*x+e)^3/f
```

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}=0.115$, Rules used = {3904, 3473, 8}

$$\frac{a^2c^2\tan^3(e+fx)}{3f}-\frac{a^2c^2\tan(e+fx)}{f}+a^2c^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] a^2*c^2*x - (a^2*c^2*Tan[e + f*x])/f + (a^2*c^2*Tan[e + f*x]^3)/(3*f)
```

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 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^2\,dx &= \left(a^2c^2\right)\int \tan^4(e+fx)\,dx\\ &= \frac{a^2c^2\tan^3(e+fx)}{3f}-\left(a^2c^2\right)\int \tan^2(e+fx)\,dx\\ &= -\frac{a^2c^2\tan(e+fx)}{f}+\frac{a^2c^2\tan^3(e+fx)}{3f}+\left(a^2c^2\right)\int 1\,dx\\ &= a^2c^2x-\frac{a^2c^2\tan(e+fx)}{f}+\frac{a^2c^2\tan^3(e+fx)}{3f}\end{aligned}$$

Mathematica [A] time = 0.03, size = 45, normalized size = 0.96

$$a^2c^2\left(\frac{\tan^{-1}(\tan(e+fx))}{f}+\frac{\tan^3(e+fx)}{3f}-\frac{\tan(e+fx)}{f}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] a^2*c^2*(ArcTan[Tan[e + f*x]]/f - Tan[e + f*x]/f + Tan[e + f*x]^3/(3*f))
```

fricas [A] time = 0.43, size = 65, normalized size = 1.38

$$\frac{3\,a^2c^2fx\cos\left(fx+e\right)^3-\left(4\,a^2c^2\cos\left(fx+e\right)^2-a^2c^2\right)\sin\left(fx+e\right)}{3\,f\cos\left(fx+e\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/3*(3*a^2*c^2*f*x*cos(f*x + e)^3 - (4*a^2*c^2*cos(f*x + e)^2 - a^2*c^2)*si
n(f*x + e))/(f*cos(f*x + e)^3)
```

giac [A] time = 0.30, size = 51, normalized size = 1.09

$$\frac{a^2c^2\tan\left(fx+e\right)^3+3\left(fx+e\right)a^2c^2-3\,a^2c^2\tan\left(fx+e\right)}{3\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/3*(a^2*c^2*tan(f*x + e)^3 + 3*(f*x + e)*a^2*c^2 - 3*a^2*c^2*tan(f*x + e))
/f
```

maple [A] time = 0.82, size = 58, normalized size = 1.23

$$\frac{-2a^2c^2\tan\left(fx+e\right)+\left(fx+e\right)a^2c^2-a^2c^2\left(-\frac{2}{3}-\frac{\left(\sec^2\left(fx+e\right)\right)}{3}\right)\tan\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^2,x)
```

```
[Out] 1/f*(-2*a^2*c^2*tan(f*x+e)+(f*x+e)*a^2*c^2-a^2*c^2*(-2/3-1/3*sec(f*x+e)^2)*
tan(f*x+e))
```

maxima [A] time = 0.32, size = 57, normalized size = 1.21

$$\frac{\left(\tan\left(fx+e\right)^3+3\,\tan\left(fx+e\right)\right)a^2c^2+3\left(fx+e\right)a^2c^2-6\,a^2c^2\tan\left(fx+e\right)}{3\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/3*((tan(f*x + e)^3 + 3*tan(f*x + e))*a^2*c^2 + 3*(f*x + e)*a^2*c^2 - 6*a^
2*c^2*tan(f*x + e))/f
```

mupad [B] time = 3.71, size = 84, normalized size = 1.79

$$a^2\,c^2\,x+\frac{2\,a^2\,c^2\,\mathrm{tan}\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5-\frac{20\,a^2\,c^2\,\mathrm{tan}\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{3}+2\,a^2\,c^2\,\mathrm{tan}\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{f\,{\left({\mathrm{tan}\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^2-1\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^2,x)
```

```
[Out] a^2*c^2*x + (2*a^2*c^2*tan(e/2 + (f*x)/2)^5 - (20*a^2*c^2*tan(e/2 + (f*x)/2
)^3)/3 + 2*a^2*c^2*tan(e/2 + (f*x)/2))/(f*(tan(e/2 + (f*x)/2)^2 - 1)^3)
```

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

$$a^2c^2\left(\int 1\,dx + \int \left(-2\sec^2\left(e+fx\right)\right)\,dx + \int \sec^4\left(e+fx\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2*(c-c*sec(f*x+e))**2,x)
```

```
[Out] a**2*c**2*(Integral(1, x) + Integral(-2*sec(e + f*x)**2, x) + Integral(sec(
e + f*x)**4, x))
```

3.5 $\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))\,dx$

Optimal. Leaf size=55

$$\frac{a^2c\tanh^{-1}(\sin(e+fx))}{2f}-\frac{c\tan(e+fx)\left(a^2\sec(e+fx)+2a^2\right)}{2f}+a^2cx$$

```
[Out] a^2*c*x+1/2*a^2*c*arctanh(sin(f*x+e))/f-1/2*c*(2*a^2+a^2*sec(f*x+e))*tan(f*
x+e)/f
```

Rubi [A] time = 0.06, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3904, 3881, 3770}

$$\frac{a^2c\tanh^{-1}(\sin(e+fx))}{2f}-\frac{c\tan(e+fx)\left(a^2\sec(e+fx)+2a^2\right)}{2f}+a^2cx$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x]),x]
```

```
[Out] a^2*c*x + (a^2*c*ArcTanh[Sin[e + f*x]])/(2*f) - (c*(2*a^2 + a^2*Sec[e + f*x
])*Tan[e + f*x])/(2*f)
```

Rule 3770

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

Rule 3881

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[(e*(e*Cot[c + d*x])^(m - 1)*(a*m + b*(m - 1)*Csc[c
 + d*x]))/(d*m*(m - 1)), x] - Dist[e^2/m, Int[(e*Cot[c + d*x])^(m - 2)*(a*m
 + b*(m - 1)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && GtQ[m, 1
]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))\,dx &= -\left((ac)\int (a+a\sec(e+fx))\tan^2(e+fx)\,dx\right)\\ &= -\frac{c\left(2a^2+a^2\sec(e+fx)\right)\tan(e+fx)}{2f}+\frac{1}{2}(ac)\int (2a+a\sec(e+\\ &= a^2cx-\frac{c\left(2a^2+a^2\sec(e+fx)\right)\tan(e+fx)}{2f}+\frac{1}{2}\left(a^2c\right)\int \sec(e+\\ &= a^2cx+\frac{a^2c\tanh^{-1}(\sin(e+fx))}{2f}-\frac{c\left(2a^2+a^2\sec(e+fx)\right)\tan(e\end{aligned}$$

Mathematica [A] time = 0.29, size = 72, normalized size = 1.31

$$\frac{a^2 c \sec^2(e+fx)\left(-\sin(e+fx)-\sin(2(e+fx))+(e+fx)\cos(2(e+fx))+\cos^2(e+fx)\tanh^{-1}(\sin(e+fx))+e\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x]),x]
```

```
[Out] (a^2*c*Sec[e + f*x]^2*(e + f*x + ArcTanh[Sin[e + f*x]]*Cos[e + f*x]^2 + (e
+ f*x)*Cos[2*(e + f*x)] - Sin[e + f*x] - Sin[2*(e + f*x)]))/(2*f)
```

fricas [B] time = 0.48, size = 103, normalized size = 1.87

$$\frac{4\,a^2cfx\cos\left(fx+e\right)^2+a^2c\cos\left(fx+e\right)^2\log\left(\sin\left(fx+e\right)+1\right)-a^2c\cos\left(fx+e\right)^2\log\left(-\sin\left(fx+e\right)+1\right)-2\left(\right.}{4\,f\cos\left(fx+e\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/4*(4*a^2*c*f*x*cos(f*x + e)^2 + a^2*c*cos(f*x + e)^2*log(sin(f*x + e) + 1
) - a^2*c*cos(f*x + e)^2*log(-sin(f*x + e) + 1) - 2*(2*a^2*c*cos(f*x + e) +
 a^2*c)*sin(f*x + e))/(f*cos(f*x + e)^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((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*(-2*a^2*c/2*(f*x+exp(1))/2+a^2*c/4*ln(abs(tan((f*x+exp(1))/2)-
1))-a^2*c/4*ln(abs(tan((f*x+exp(1))/2)+1))-(tan((f*x+exp(1))/2)^3*a^2*c-3*t
an((f*x+exp(1))/2)*a^2*c)*1/2/(tan((f*x+exp(1))/2)^2-1)^2)
```

maple [A] time = 0.86, size = 76, normalized size = 1.38

$$\frac{a^2c\ln\left(\sec\left(fx+e\right)+\tan\left(fx+e\right)\right)}{2f}+a^2cx+\frac{a^2ce}{f}-\frac{a^2c\tan\left(fx+e\right)}{f}-\frac{a^2c\sec\left(fx+e\right)\tan\left(fx+e\right)}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e)),x)
```

```
[Out] 1/2/f*a^2*c*ln(sec(f*x+e)+tan(f*x+e))+a^2*c*x+1/f*a^2*c*e-a^2*c*tan(f*x+e)/
f-1/2/f*a^2*c*sec(f*x+e)*tan(f*x+e)
```

maxima [A] time = 0.33, size = 95, normalized size = 1.73

$$\frac{4\left(fx+e\right)a^2c+a^2c\left(\frac{2\sin\left(fx+e\right)}{\sin\left(fx+e\right)^2-1}-\log\left(\sin\left(fx+e\right)+1\right)+\log\left(\sin\left(fx+e\right)-1\right)\right)+4\,a^2c\log\left(\sec\left(fx+e\right)+\tan\right.}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/4*(4*(f*x + e)*a^2*c + a^2*c*(2*sin(f*x + e)/(sin(f*x + e)^2 - 1) - log(s
in(f*x + e) + 1) + log(sin(f*x + e) - 1)) + 4*a^2*c*log(sec(f*x + e) + tan(
f*x + e)) - 4*a^2*c*tan(f*x + e))/f
```

mupad [B] time = 1.51, size = 91, normalized size = 1.65

$$a^2\,c\,x-\frac{3\,a^2\,c\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)-a^2\,c\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{f\,\left({\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^4-2\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^2+1\right)}+\frac{a^2\,c\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x)),x)
```

```
[Out] a^2*c*x - (3*a^2*c*tan(e/2 + (f*x)/2) - a^2*c*tan(e/2 + (f*x)/2)^3)/(f*(tan
(e/2 + (f*x)/2)^4 - 2*tan(e/2 + (f*x)/2)^2 + 1)) + (a^2*c*atanh(tan(e/2 + (
f*x)/2)))/f
```

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

$$-a^2c\left(\int (-1)\,dx+\int \left(-\sec\left(e+fx\right)\right)dx+\int \sec^2\left(e+fx\right)dx+\int \sec^3\left(e+fx\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2*(c-c*sec(f*x+e)),x)
```

```
[Out] -a**2*c*(Integral(-1, x) + Integral(-sec(e + f*x), x) + Integral(sec(e + f*
x)**2, x) + Integral(sec(e + f*x)**3, x))
```

3.6 $\int \frac{(a+a\sec(e+fx))^2}{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=56

$$-\frac{a^2\tanh^{-1}(\sin(e+fx))}{cf}-\frac{4a^2\tan(e+fx)}{cf(1-\sec(e+fx))}+\frac{a^2x}{c}$$

```
[Out] a^2*x/c-a^2*arctanh(sin(f*x+e))/c/f-4*a^2*tan(f*x+e)/c/f/(1-sec(f*x+e))
```

Rubi [A] time = 0.16, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {3903, 3777, 8, 3794, 3789, 3770}

$$-\frac{a^2\tanh^{-1}(\sin(e+fx))}{cf}-\frac{4a^2\tan(e+fx)}{cf(1-\sec(e+fx))}+\frac{a^2x}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x]),x]
```

```
[Out] (a^2*x)/c - (a^2*ArcTanh[Sin[e + f*x]])/(c*f) - (4*a^2*Tan[e + f*x])/(c*f*(
1 - Sec[e + f*x]))
```

Rule 8

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

Rule 3770

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

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3789

```
Int[csc[(e_.) + (f_.)*(x_)]^2/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Sym
bol] :> Dist[1/b, Int[Csc[e + f*x], x], x] - Dist[a/b, Int[Csc[e + f*x]/(a
+ b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^2}{c-c\sec(e+fx)}\,dx = \frac{\int \left(\frac{a^2}{1-\sec(e+fx)}+\frac{2a^2\sec(e+fx)}{1-\sec(e+fx)}+\frac{a^2\sec^2(e+fx)}{1-\sec(e+fx)}\right)dx}{c}$$
$$= \frac{a^2\int \frac{1}{1-\sec(e+fx)}\,dx}{c}+\frac{a^2\int \frac{\sec^2(e+fx)}{1-\sec(e+fx)}\,dx}{c}+\frac{\left(2a^2\right)\int \frac{\sec(e+fx)}{1-\sec(e+fx)}\,dx}{c}$$
$$= -\frac{3a^2\tan(e+fx)}{cf(1-\sec(e+fx))}-\frac{a^2\int -1\,dx}{c}-\frac{a^2\int \sec(e+fx)\,dx}{c}+\frac{a^2\int \frac{\sec(e+fx)}{1-\sec(e+fx)}\,dx}{c}$$
$$= \frac{a^2x}{c}-\frac{a^2\tanh^{-1}(\sin(e+fx))}{cf}-\frac{4a^2\tan(e+fx)}{cf(1-\sec(e+fx))}$$

Mathematica [B] time = 0.29, size = 169, normalized size = 3.02

$$\frac{a^2\csc\left(\frac{e}{2}\right)\sin\left(\frac{1}{2}(e+fx)\right)\left(-\cos\left(\frac{fx}{2}\right)\left(\log\left(\cos\left(\frac{1}{2}(e+fx)\right)-\sin\left(\frac{1}{2}(e+fx)\right)\right)-\log\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x]),x]
```

```
[Out] (a^2*Csc[e/2]*(-(Cos[(f*x)/2]*(f*x + Log[Cos[(e + f*x)/2] - Sin[(e + f*x)/2
]] - Log[Cos[(e + f*x)/2] + Sin[(e + f*x)/2]])) + Cos[e + (f*x)/2]*(f*x + L
og[Cos[(e + f*x)/2] - Sin[(e + f*x)/2]] - Log[Cos[(e + f*x)/2] + Sin[(e + f
*x)/2]]) + 8*Sin[(f*x)/2])*Sin[(e + f*x)/2])/(c*f*(-1 + Cos[e + f*x]))
```

fricas [A] time = 0.48, size = 87, normalized size = 1.55

$$\frac{2\,a^2fx\sin\left(fx+e\right)-a^2\log\left(\sin\left(fx+e\right)+1\right)\sin\left(fx+e\right)+a^2\log\left(-\sin\left(fx+e\right)+1\right)\sin\left(fx+e\right)+8\,a^2\cos}{2\,cf\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a^2*f*x*sin(f*x + e) - a^2*log(sin(f*x + e) + 1)*sin(f*x + e) + a^2*
log(-sin(f*x + e) + 1)*sin(f*x + e) + 8*a^2*cos(f*x + e) + 8*a^2)/(c*f*sin(
f*x + e))
```

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((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*(-a^2*1/2/c*ln(abs(tan((f*x+exp(1))/2)-1))+a^2*1/2/c*ln(abs(ta
n((f*x+exp(1))/2)+1))-2*a^2/c*1/2*(f*x+exp(1))/2-2*a^2/c/tan((f*x+exp(1))/2
))
```

maple [A] time = 0.78, size = 90, normalized size = 1.61

$$\frac{a^2\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}{fc}-\frac{a^2\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+1\right)}{fc}+\frac{4a^2}{fc\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{fc}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x)

[Out] 1/f*a^2/c*ln(tan(1/2*e+1/2*f*x)-1)-1/f*a^2/c*ln(tan(1/2*e+1/2*f*x)+1)+4/f*a^2/c/tan(1/2*e+1/2*f*x)+2/f*a^2/c*arctan(tan(1/2*e+1/2*f*x))

maxima [B] time = 0.43, size = 153, normalized size = 2.73

$$\frac{a^2\left(\frac{2\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{c}+\frac{\cos(fx+e)+1}{c\sin(fx+e)}\right)-a^2\left(\frac{\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}+1\right)}{c}-\frac{\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}-1\right)}{c}-\frac{\cos(fx+e)+1}{c\sin(fx+e)}\right)+\frac{2a^2(\cos(fx+e)+1)}{c\sin(fx+e)}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x, algorithm="maxima")

[Out] (a^2*(2*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c + (cos(f*x + e) + 1)/(c*sin(f*x + e))) - a^2*(log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/c - log(sin(f*x + e)/(cos(f*x + e) + 1) - 1)/c - (cos(f*x + e) + 1)/(c*sin(f*x + e))) + 2*a^2*(cos(f*x + e) + 1)/(c*sin(f*x + e)))/f

mupad [B] time = 1.48, size = 46, normalized size = 0.82

$$\frac{a^2\,x}{c}-\frac{a^2\,\left(2\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)-\frac{4}{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}\right)}{c\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + a/cos(e + f*x))^2/(c - c/cos(e + f*x)),x)

[Out] (a^2*x)/c - (a^2*(2*atanh(tan(e/2 + (f*x)/2)) - 4/tan(e/2 + (f*x)/2)))/(c*f)

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

$$-\frac{a^2\left(\int\frac{2\sec(e+fx)}{\sec(e+fx)-1}\,dx+\int\frac{\sec^2(e+fx)}{\sec(e+fx)-1}\,dx+\int\frac{1}{\sec(e+fx)-1}\,dx\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+a*sec(f*x+e))**2/(c-c*sec(f*x+e)),x)

[Out] -a**2*(Integral(2*sec(e + f*x)/(sec(e + f*x) - 1), x) + Integral(sec(e + f*x)**2/(sec(e + f*x) - 1), x) + Integral(1/(sec(e + f*x) - 1), x))/c

3.7 $\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=71

$$-\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))}-\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}+\frac{a^2x}{c^2}$$

```
[Out] a^2*x/c^2-4/3*a^2*tan(f*x+e)/c^2/f/(1-sec(f*x+e))^2-4/3*a^2*tan(f*x+e)/c^2/
f/(1-sec(f*x+e))
```

Rubi [A] time = 0.24, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {3903, 3777, 3919, 3794, 3796, 3797}

$$-\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))}-\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}+\frac{a^2x}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (a^2*x)/c^2 - (4*a^2*Tan[e + f*x])/(3*c^2*f*(1 - Sec[e + f*x])^2) - (4*a^2*
Tan[e + f*x])/(3*c^2*f*(1 - Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
```

```
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^2}\,dx &= \frac{\int \left(\frac{a^2}{(1-\sec(e+fx))^2}+\frac{2a^2\sec(e+fx)}{(1-\sec(e+fx))^2}+\frac{a^2\sec^2(e+fx)}{(1-\sec(e+fx))^2}\right)dx}{c^2}\\
&= \frac{a^2\int \frac{1}{(1-\sec(e+fx))^2}\,dx}{c^2}+\frac{a^2\int \frac{\sec^2(e+fx)}{(1-\sec(e+fx))^2}\,dx}{c^2}+\frac{\left(2a^2\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{c^2}\\
&= -\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}-\frac{a^2\int \frac{-3-\sec(e+fx)}{1-\sec(e+fx)}\,dx}{3c^2}\\
&= \frac{a^2x}{c^2}-\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}+\frac{\left(4a^2\right)\int \frac{\sec(e+fx)}{1-\sec(e+fx)}\,dx}{3c^2}\\
&= \frac{a^2x}{c^2}-\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}-\frac{4a^2\tan(e+fx)}{3c^2f(1-\sec(e+fx))}
\end{aligned}$$

Mathematica [C] time = 0.06, size = 53, normalized size = 0.75

$$-\frac{2a^2\cot^3\left(\frac{e}{2}+\frac{fx}{2}\right)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (-2*a^2*Cot[e/2 + (f*x)/2]^3*Hypergeometric2F1[-3/2, 1, -1/2, -Tan[e/2 + (f
*x)/2]^2])/(3*c^2*f)
```

fricas [A] time = 0.46, size = 88, normalized size = 1.24

$$\frac{8\,a^2\cos\left(fx+e\right)^2+4\,a^2\cos\left(fx+e\right)-4\,a^2+3\,\left(a^2fx\cos\left(fx+e\right)-a^2fx\right)\sin\left(fx+e\right)}{3\,\left(c^2f\cos\left(fx+e\right)-c^2f\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/3*(8*a^2*cos(f*x + e)^2 + 4*a^2*cos(f*x + e) - 4*a^2 + 3*(a^2*f*x*cos(f*x
 + e) - a^2*f*x)*sin(f*x + e))/((c^2*f*cos(f*x + e) - c^2*f)*sin(f*x + e))
```

giac [A] time = 0.29, size = 60, normalized size = 0.85

$$\frac{\frac{3\,(fx+e)a^2}{c^2}+\frac{2\left(3\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^2-a^2\right)}{c^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3}}{3\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/3*(3*(f*x + e)*a^2/c^2 + 2*(3*a^2*tan(1/2*f*x + 1/2*e)^2 - a^2)/(c^2*tan(
1/2*f*x + 1/2*e)^3))/f
```

maple [A] time = 0.86, size = 67, normalized size = 0.94

$$-\frac{2a^2}{3f\,c^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{2a^2}{f\,c^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x)
```

```
[Out] -2/3/f*a^2/c^2/tan(1/2*e+1/2*f*x)^3+2/f*a^2/c^2/tan(1/2*e+1/2*f*x)+2/f*a^2/
c^2*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 174, normalized size = 2.45

$$\frac{a^2\left(\frac{12\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{c^2}+\frac{\left(\frac{9\sin(fx+e)^2}{(\cos(fx+e)+1)^2}-1\right)(\cos(fx+e)+1)^3}{c^2\sin(fx+e)^3}\right)-\frac{a^2\left(\frac{3\sin(fx+e)^2}{(\cos(fx+e)+1)^2}+1\right)(\cos(fx+e)+1)^3}{c^2\sin(fx+e)^3}+\frac{2a^2\left(\frac{3\sin(fx+e)^2}{(\cos(fx+e)+1)^2}-1\right)(\cos(f}{c^2\sin(fx+e)^3}}{6f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/6*(a^2*(12*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^2 + (9*sin(f*x + e)^
2/(cos(f*x + e) + 1)^2 - 1)*(cos(f*x + e) + 1)^3/(c^2*sin(f*x + e)^3)) - a^
2*(3*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)*(cos(f*x + e) + 1)^3/(c^2*sin
(f*x + e)^3) + 2*a^2*(3*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 - 1)*(cos(f*x +
 e) + 1)^3/(c^2*sin(f*x + e)^3))/f
```

mupad [B] time = 1.39, size = 40, normalized size = 0.56

$$\frac{a^2\left(-2\cot\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3+6\cot\left(\frac{e}{2}+\frac{f\,x}{2}\right)+3\,f\,x\right)}{3\,c^2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2/(c - c/cos(e + f*x))^2,x)
```

```
[Out] (a^2*(6*cot(e/2 + (f*x)/2) - 2*cot(e/2 + (f*x)/2)^3 + 3*f*x))/(3*c^2*f)
```

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

$$\frac{a^2\left(\int\frac{2\sec(e+fx)}{\sec^2(e+fx)-2\sec(e+fx)+1}\,dx+\int\frac{\sec^2(e+fx)}{\sec^2(e+fx)-2\sec(e+fx)+1}\,dx+\int\frac{1}{\sec^2(e+fx)-2\sec(e+fx)+1}\,dx\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**2,x)
```

```
[Out] a**2*(Integral(2*sec(e + f*x)/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x) +
Integral(sec(e + f*x)**2/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x) + Integ
ral(1/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x))/c**2
```

3.8 $\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=102

$$-\frac{23a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx))}-\frac{8a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{4a^2\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}+\frac{a^2x}{c^3}$$

```
[Out] a^2*x/c^3-4/5*a^2*tan(f*x+e)/c^3/f/(1-sec(f*x+e))^3-8/15*a^2*tan(f*x+e)/c^3
/f/(1-sec(f*x+e))^2-23/15*a^2*tan(f*x+e)/c^3/f/(1-sec(f*x+e))
```

Rubi [A] time = 0.33, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797}

$$-\frac{23a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx))}-\frac{8a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{4a^2\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}+\frac{a^2x}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (a^2*x)/c^3 - (4*a^2*Tan[e + f*x])/(5*c^3*f*(1 - Sec[e + f*x])^3) - (8*a^2*
Tan[e + f*x])/(15*c^3*f*(1 - Sec[e + f*x])^2) - (23*a^2*Tan[e + f*x])/(15*c
^3*f*(1 - Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
```

```
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^3}\,dx = \frac{\int \left(\frac{a^2}{(1-\sec(e+fx))^3}+\frac{2a^2\sec(e+fx)}{(1-\sec(e+fx))^3}+\frac{a^2\sec^2(e+fx)}{(1-\sec(e+fx))^3}\right)dx}{c^3}$$

$$= \frac{a^2\int \frac{1}{(1-\sec(e+fx))^3}\,dx}{c^3}+\frac{a^2\int \frac{\sec^2(e+fx)}{(1-\sec(e+fx))^3}\,dx}{c^3}+\frac{\left(2a^2\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{c^3}$$

$$= -\frac{4a^2\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}-\frac{a^2\int \frac{-5-2\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{5c^3}-\frac{\left(3a^2\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{5c^3}+\frac{(4a^2}{}$$

$$= -\frac{4a^2\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}-\frac{8a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}+\frac{a^2\int \frac{15+7\sec(e+fx)}{1-\sec(e+fx)}\,dx}{15c^3}-\frac{a^2}{}$$

$$= \frac{a^2x}{c^3}-\frac{4a^2\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}-\frac{8a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx)}$$

$$= \frac{a^2x}{c^3}-\frac{4a^2\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}-\frac{8a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{23a^2\tan(e+fx)}{15c^3f(1-\sec(e+fx)}$$

Mathematica [A] time = 0.63, size = 171, normalized size = 1.68

$$\frac{a^2\csc\left(\frac{e}{2}\right)\csc^5\left(\frac{1}{2}(e+fx)\right)\left(-360\sin\left(e+\frac{fx}{2}\right)+280\sin\left(e+\frac{3fx}{2}\right)+150\sin\left(2e+\frac{3fx}{2}\right)-86\sin\left(2e+\frac{5fx}{2}\right)-1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (a^2*Csc[e/2]*Csc[(e + f*x)/2]^5*(150*f*x*Cos[(f*x)/2] - 150*f*x*Cos[e + (f
*x)/2] - 75*f*x*Cos[e + (3*f*x)/2] + 75*f*x*Cos[2*e + (3*f*x)/2] + 15*f*x*C
os[2*e + (5*f*x)/2] - 15*f*x*Cos[3*e + (5*f*x)/2] - 500*Sin[(f*x)/2] - 360*
Sin[e + (f*x)/2] + 280*Sin[e + (3*f*x)/2] + 150*Sin[2*e + (3*f*x)/2] - 86*S
in[2*e + (5*f*x)/2]))/(480*c^3*f)
```

fricas [A] time = 0.43, size = 128, normalized size = 1.25

$$\frac{43\,a^2\cos\left(fx+e\right)^3-11\,a^2\cos\left(fx+e\right)^2-31\,a^2\cos\left(fx+e\right)+23\,a^2+15\left(a^2fx\cos\left(fx+e\right)^2-2\,a^2fx\cos\left(f\right.\right.}{15\left(c^3f\cos\left(fx+e\right)^2-2\,c^3f\cos\left(fx+e\right)+c^3f\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(43*a^2*cos(f*x + e)^3 - 11*a^2*cos(f*x + e)^2 - 31*a^2*cos(f*x + e) +
 23*a^2 + 15*(a^2*f*x*cos(f*x + e)^2 - 2*a^2*f*x*cos(f*x + e) + a^2*f*x)*si
n(f*x + e))/((c^3*f*cos(f*x + e)^2 - 2*c^3*f*cos(f*x + e) + c^3*f)*sin(f*x
+ e))
```

giac [A] time = 0.46, size = 76, normalized size = 0.75

$$\frac{\frac{15\,(fx+e)a^2}{c^3}+\frac{30\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-10\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^2+3\,a^2}{c^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5}}{15\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] 1/15*(15*(f*x + e)*a^2/c^3 + (30*a^2*tan(1/2*f*x + 1/2*e)^4 - 10*a^2*tan(1/
2*f*x + 1/2*e)^2 + 3*a^2)/(c^3*tan(1/2*f*x + 1/2*e)^5))/f
```

maple [A] time = 1.05, size = 89, normalized size = 0.87

$$\frac{a^2}{5f\,c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}-\frac{2a^2}{3f\,c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{2a^2}{f\,c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/5/f*a^2/c^3/tan(1/2*e+1/2*f*x)^5-2/3/f*a^2/c^3/tan(1/2*e+1/2*f*x)^3+2/f*a
^2/c^3/tan(1/2*e+1/2*f*x)+2/f*a^2/c^3*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.45, size = 215, normalized size = 2.11

$$\frac{a^2\left(\frac{120\,\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{c^3}-\frac{\left(\frac{20\,\sin(fx+e)^2}{(\cos(fx+e)+1)^2}-\frac{105\,\sin(fx+e)^4}{(\cos(fx+e)+1)^4}-3\right)(\cos(fx+e)+1)^5}{c^3\sin(fx+e)^5}\right)-\frac{2\,a^2\left(\frac{10\,\sin(fx+e)^2}{(\cos(fx+e)+1)^2}-\frac{15\,\sin(fx+e)^4}{(\cos(fx+e)+1)^4}-3\right)(\cos(fx+e)+1)^5}{c^3\sin(fx+e)^5}-\cdots}{60\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] 1/60*(a^2*(120*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^3 - (20*sin(f*x +
e)^2/(cos(f*x + e) + 1)^2 - 105*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 - 3)*(c
os(f*x + e) + 1)^5/(c^3*sin(f*x + e)^5)) - 2*a^2*(10*sin(f*x + e)^2/(cos(f*
x + e) + 1)^2 - 15*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 - 3)*(cos(f*x + e) +
 1)^5/(c^3*sin(f*x + e)^5) - 3*a^2*(5*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 -
 1)*(cos(f*x + e) + 1)^5/(c^3*sin(f*x + e)^5))/f
```

mupad [B] time = 1.45, size = 96, normalized size = 0.94

$$\frac{a^2\,x}{c^3}+\frac{\frac{a^2\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{5}-\frac{2\,a^2\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{3}+2\,a^2\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4}{c^3\,f\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2/(c - c/cos(e + f*x))^3,x)
```

```
[Out] (a^2*x)/c^3 + ((a^2*cos(e/2 + (f*x)/2)^5)/5 + 2*a^2*cos(e/2 + (f*x)/2)*sin(
e/2 + (f*x)/2)^4 - (2*a^2*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)^2)/3)/(c^
3*f*sin(e/2 + (f*x)/2)^5)
```

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

$$-\frac{a^2\left(\int\frac{2\sec\left(e+fx\right)}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx+\int\frac{\sec^2\left(e+fx\right)}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx+\int\frac{1}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)}\right.}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**3,x)
```

```
[Out] -a**2*(Integral(2*sec(e + f*x)/(sec(e + f*x)**3 - 3*sec(e + f*x)**2 + 3*sec
(e + f*x) - 1), x) + Integral(sec(e + f*x)**2/(sec(e + f*x)**3 - 3*sec(e +
f*x)**2 + 3*sec(e + f*x) - 1), x) + Integral(1/(sec(e + f*x)**3 - 3*sec(e +
 f*x)**2 + 3*sec(e + f*x) - 1), x))/c**3
```

3.9 $\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^4}\,dx$

Optimal. Leaf size=133

$$-\frac{164a^2\tan(e+fx)}{105c^4f(1-\sec(e+fx))}-\frac{59a^2\tan(e+fx)}{105c^4f(1-\sec(e+fx))^2}-\frac{12a^2\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}-\frac{4a^2\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}+\frac{a^2x}{c^4}$$

```
[Out] a^2*x/c^4-4/7*a^2*tan(f*x+e)/c^4/f/(1-sec(f*x+e))^4-12/35*a^2*tan(f*x+e)/c^
4/f/(1-sec(f*x+e))^3-59/105*a^2*tan(f*x+e)/c^4/f/(1-sec(f*x+e))^2-164/105*a
^2*tan(f*x+e)/c^4/f/(1-sec(f*x+e))
```

Rubi [A] time = 0.43, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797}

$$-\frac{164a^2\tan(e+fx)}{105c^4f(1-\sec(e+fx))}-\frac{59a^2\tan(e+fx)}{105c^4f(1-\sec(e+fx))^2}-\frac{12a^2\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}-\frac{4a^2\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}+\frac{a^2x}{c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (a^2*x)/c^4 - (4*a^2*Tan[e + f*x])/(7*c^4*f*(1 - Sec[e + f*x])^4) - (12*a^2
*Tan[e + f*x])/(35*c^4*f*(1 - Sec[e + f*x])^3) - (59*a^2*Tan[e + f*x])/(105
*c^4*f*(1 - Sec[e + f*x])^2) - (164*a^2*Tan[e + f*x])/(105*c^4*f*(1 - Sec[e
 + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
```

```
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^4}\,dx = \frac{\int \left(\frac{a^2}{(1-\sec(e+fx))^4}+\frac{2a^2\sec(e+fx)}{(1-\sec(e+fx))^4}+\frac{a^2\sec^2(e+fx)}{(1-\sec(e+fx))^4}\right)dx}{c^4}$$

$$= \frac{a^2\int \frac{1}{(1-\sec(e+fx))^4}\,dx}{c^4}+\frac{a^2\int \frac{\sec^2(e+fx)}{(1-\sec(e+fx))^4}\,dx}{c^4}+\frac{\left(2a^2\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^4}\,dx}{c^4}$$

$$= -\frac{4a^2\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}-\frac{a^2\int \frac{-7-3\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{7c^4}-\frac{\left(4a^2\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{7c^4}+\frac{\left(6a^{2}\right.}{}$$

$$= -\frac{4a^2\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}-\frac{12a^2\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}+\frac{a^2\int \frac{35+20\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{35c^4}-\frac{\left(8\right.}{}$$

$$= -\frac{4a^2\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}-\frac{12a^2\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}-\frac{59a^2\tan(e+fx)}{105c^4f(1-\sec(e+fx))^2}-$$

$$= \frac{a^2x}{c^4}-\frac{4a^2\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}-\frac{12a^2\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}-\frac{59a^2\tan(e+fx)}{105c^4f(1-\sec(e+f}$$

$$= \frac{a^2x}{c^4}-\frac{4a^2\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}-\frac{12a^2\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}-\frac{59a^2\tan(e+fx)}{105c^4f(1-\sec(e+f}$$

Mathematica [A] time = 0.64, size = 227, normalized size = 1.71

$$a^2\csc\left(\frac{e}{2}\right)\csc^7\left(\frac{1}{2}(e+fx)\right)\left(-10430\sin\left(e+\frac{fx}{2}\right)+8568\sin\left(e+\frac{3fx}{2}\right)+4830\sin\left(2e+\frac{3fx}{2}\right)-3206\sin\left(2e+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (a^2*Csc[e/2]*Csc[(e + f*x)/2]^7*(3675*f*x*Cos[(f*x)/2] - 3675*f*x*Cos[e +
(f*x)/2] - 2205*f*x*Cos[e + (3*f*x)/2] + 2205*f*x*Cos[2*e + (3*f*x)/2] + 73
5*f*x*Cos[2*e + (5*f*x)/2] - 735*f*x*Cos[3*e + (5*f*x)/2] - 105*f*x*Cos[3*e
 + (7*f*x)/2] + 105*f*x*Cos[4*e + (7*f*x)/2] - 11900*Sin[(f*x)/2] - 10430*S
```

```
in[e + (f*x)/2] + 8568*Sin[e + (3*f*x)/2] + 4830*Sin[2*e + (3*f*x)/2] - 320
6*Sin[2*e + (5*f*x)/2] - 1260*Sin[3*e + (5*f*x)/2] + 638*Sin[3*e + (7*f*x)/
2]))/(13440*c^4*f)
```

fricas [A] time = 0.43, size = 172, normalized size = 1.29

$$\frac{319\,a^2\cos\left(fx+e\right)^4-327\,a^2\cos\left(fx+e\right)^3-95\,a^2\cos\left(fx+e\right)^2+387\,a^2\cos\left(fx+e\right)-164\,a^2+105\left(a^2fx\cos\left(\cdots\right.\right.}{105\left(c^4f\cos\left(fx+e\right)^3-3\,c^4f\cos\left(fx+e\right)^2+3\,c^4f\cos\left(fx\cdots\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] 1/105*(319*a^2*cos(f*x + e)^4 - 327*a^2*cos(f*x + e)^3 - 95*a^2*cos(f*x + e
)^2 + 387*a^2*cos(f*x + e) - 164*a^2 + 105*(a^2*f*x*cos(f*x + e)^3 - 3*a^2*
f*x*cos(f*x + e)^2 + 3*a^2*f*x*cos(f*x + e) - a^2*f*x)*sin(f*x + e))/((c^4*
f*cos(f*x + e)^3 - 3*c^4*f*cos(f*x + e)^2 + 3*c^4*f*cos(f*x + e) - c^4*f)*s
in(f*x + e))
```

giac [A] time = 0.33, size = 93, normalized size = 0.70

$$\frac{\frac{210\left(fx+e\right)a^2}{c^4}+\frac{420\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6-140\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4+63\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^2-15\,a^2}{c^4\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^7}}{210\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] 1/210*(210*(f*x + e)*a^2/c^4 + (420*a^2*tan(1/2*f*x + 1/2*e)^6 - 140*a^2*ta
n(1/2*f*x + 1/2*e)^4 + 63*a^2*tan(1/2*f*x + 1/2*e)^2 - 15*a^2)/(c^4*tan(1/2
*f*x + 1/2*e)^7))/f
```

maple [A] time = 0.90, size = 111, normalized size = 0.83

$$-\frac{a^2}{14f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^7}+\frac{3a^2}{10f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}-\frac{2a^2}{3f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{2a^2}{f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x)
```

```
[Out] -1/14/f*a^2/c^4/tan(1/2*e+1/2*f*x)^7+3/10/f*a^2/c^4/tan(1/2*e+1/2*f*x)^5-2/
3/f*a^2/c^4/tan(1/2*e+1/2*f*x)^3+2/f*a^2/c^4/tan(1/2*e+1/2*f*x)+2/f*a^2/c^4
*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 294, normalized size = 2.21

$$\frac{5\,a^2\left(\frac{336\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^4}+\frac{\left(\frac{21\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\frac{77\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}+\frac{315\sin\left(fx+e\right)^6}{\left(\cos\left(fx+e\right)+1\right)^6}-3\right)\left(\cos\left(fx+e\right)+1\right)^7}{c^4\sin\left(fx+e\right)^7}\right)+\frac{a^2\left(\frac{21\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}+\frac{35\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}-\frac{105\sin\cdots}{\left(\cos\left(f\cdots\right.\right.}\cdots\right.}{c^4\sin\left(fx+e\right)\cdots}}{840\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] 1/840*(5*a^2*(336*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^4 + (21*sin(f*x
 + e)^2/(cos(f*x + e) + 1)^2 - 77*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 315
*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 3)*(cos(f*x + e) + 1)^7/(c^4*sin(f*x
 + e)^7)) + a^2*(21*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 35*sin(f*x + e)^4
/(cos(f*x + e) + 1)^4 - 105*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 15)*(cos(
f*x + e) + 1)^7/(c^4*sin(f*x + e)^7) + 6*a^2*(21*sin(f*x + e)^2/(cos(f*x +
e) + 1)^2 - 35*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 35*sin(f*x + e)^6/(cos
(f*x + e) + 1)^6 - 5)*(cos(f*x + e) + 1)^7/(c^4*sin(f*x + e)^7))/f
```

mupad [B] time = 1.50, size = 124, normalized size = 0.93

$$\frac{a^2\,x}{c^4}-\frac{\frac{a^2\,{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^7}{14}-\frac{3\,a^2\,{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^5\,{\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^2}{10}+\frac{2\,a^2\,{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^3\,{\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^4}{3}-2\,a^2\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,{\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^6}{c^4\,f\,{\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2/(c - c/cos(e + f*x))^4,x)
```

```
[Out] (a^2*x)/c^4 - ((a^2*cos(e/2 + (f*x)/2)^7)/14 - 2*a^2*cos(e/2 + (f*x)/2)*sin
(e/2 + (f*x)/2)^6 + (2*a^2*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)^4)/3 - (
3*a^2*cos(e/2 + (f*x)/2)^5*sin(e/2 + (f*x)/2)^2)/10)/(c^4*f*sin(e/2 + (f*x)
/2)^7)
```

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

$$\frac{a^2\left(\int\frac{2\sec\left(e+fx\right)}{\sec^4\left(e+fx\right)-4\sec^3\left(e+fx\right)+6\sec^2\left(e+fx\right)-4\sec\left(e+fx\right)+1}\,dx+\int\frac{\sec^2\left(e+fx\right)}{\sec^4\left(e+fx\right)-4\sec^3\left(e+fx\right)+6\sec^2\left(e+fx\right)-4\sec\left(e+fx\right)+1}\,dx+\int\right.}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**4,x)
```

```
[Out] a**2*(Integral(2*sec(e + f*x)/(sec(e + f*x)**4 - 4*sec(e + f*x)**3 + 6*sec(
e + f*x)**2 - 4*sec(e + f*x) + 1), x) + Integral(sec(e + f*x)**2/(sec(e + f
*x)**4 - 4*sec(e + f*x)**3 + 6*sec(e + f*x)**2 - 4*sec(e + f*x) + 1), x) +
Integral(1/(sec(e + f*x)**4 - 4*sec(e + f*x)**3 + 6*sec(e + f*x)**2 - 4*sec
(e + f*x) + 1), x))/c**4
```

3.10 $\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^5}\,dx$

Optimal. Leaf size=164

$$-\frac{494a^2\tan(e+fx)}{315c^5f(1-\sec(e+fx))}-\frac{179a^2\tan(e+fx)}{315c^5f(1-\sec(e+fx))^2}-\frac{37a^2\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}-\frac{16a^2\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{4a}{9c^5f(}$$

```
[Out] a^2*x/c^5-4/9*a^2*tan(f*x+e)/c^5/f/(1-sec(f*x+e))^5-16/63*a^2*tan(f*x+e)/c^
5/f/(1-sec(f*x+e))^4-37/105*a^2*tan(f*x+e)/c^5/f/(1-sec(f*x+e))^3-179/315*a
^2*tan(f*x+e)/c^5/f/(1-sec(f*x+e))^2-494/315*a^2*tan(f*x+e)/c^5/f/(1-sec(f*
x+e))
```

Rubi [A] time = 0.54, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797}

$$-\frac{494a^2\tan(e+fx)}{315c^5f(1-\sec(e+fx))}-\frac{179a^2\tan(e+fx)}{315c^5f(1-\sec(e+fx))^2}-\frac{37a^2\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}-\frac{16a^2\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{4a}{9c^5f(}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (a^2*x)/c^5 - (4*a^2*Tan[e + f*x])/(9*c^5*f*(1 - Sec[e + f*x])^5) - (16*a^2
*Tan[e + f*x])/(63*c^5*f*(1 - Sec[e + f*x])^4) - (37*a^2*Tan[e + f*x])/(105
*c^5*f*(1 - Sec[e + f*x])^3) - (179*a^2*Tan[e + f*x])/(315*c^5*f*(1 - Sec[e
 + f*x])^2) - (494*a^2*Tan[e + f*x])/(315*c^5*f*(1 - Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+a\sec(e+fx))^2}{(c-c\sec(e+fx))^5}\,dx &= \frac{\int \left(\frac{a^2}{(1-\sec(e+fx))^5}+\frac{2a^2\sec(e+fx)}{(1-\sec(e+fx))^5}+\frac{a^2\sec^2(e+fx)}{(1-\sec(e+fx))^5}\right)dx}{c^5}\\
&= \frac{a^2\int \frac{1}{(1-\sec(e+fx))^5}\,dx}{c^5}+\frac{a^2\int \frac{\sec^2(e+fx)}{(1-\sec(e+fx))^5}\,dx}{c^5}+\frac{\left(2a^2\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^5}\,dx}{c^5}\\
&= -\frac{4a^2\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}-\frac{a^2\int \frac{-9-4\sec(e+fx)}{(1-\sec(e+fx))^4}\,dx}{9c^5}-\frac{\left(5a^2\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^4}\,dx}{9c^5}+\frac{\left(8a^2\right.}{}\\
&= -\frac{4a^2\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}-\frac{16a^2\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}+\frac{a^2\int \frac{63+39\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{63c^5}-\frac{(5}{}\\
&= -\frac{4a^2\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}-\frac{16a^2\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{37a^2\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}-\\
&= -\frac{4a^2\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}-\frac{16a^2\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{37a^2\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}-\\
&= \frac{a^2x}{c^5}-\frac{4a^2\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}-\frac{16a^2\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{37a^2\tan(e+fx)}{105c^5f(1-\sec(e+f}\\
&= \frac{a^2x}{c^5}-\frac{4a^2\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}-\frac{16a^2\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{37a^2\tan(e+fx)}{105c^5f(1-\sec(e+f}
\end{aligned}
$$

Mathematica [A] time = 0.99, size = 283, normalized size = 1.73

$$a^2\csc\left(\frac{e}{2}\right)\csc^9\left(\frac{1}{2}(e+fx)\right)\left(-117810\sin\left(e+\frac{fx}{2}\right)+100002\sin\left(e+\frac{3fx}{2}\right)+68670\sin\left(2e+\frac{3fx}{2}\right)-48978\sin\left(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^2/(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (a^2*Csc[e/2]*Csc[(e + f*x)/2]^9*(39690*f*x*Cos[(f*x)/2] - 39690*f*x*Cos[e
+ (f*x)/2] - 26460*f*x*Cos[e + (3*f*x)/2] + 26460*f*x*Cos[2*e + (3*f*x)/2]
+ 11340*f*x*Cos[2*e + (5*f*x)/2] - 11340*f*x*Cos[3*e + (5*f*x)/2] - 2835*f*
x*Cos[3*e + (7*f*x)/2] + 2835*f*x*Cos[4*e + (7*f*x)/2] + 315*f*x*Cos[4*e +
(9*f*x)/2] - 315*f*x*Cos[5*e + (9*f*x)/2] - 135198*Sin[(f*x)/2] - 117810*Si
n[e + (f*x)/2] + 100002*Sin[e + (3*f*x)/2] + 68670*Sin[2*e + (3*f*x)/2] - 4
8978*Sin[2*e + (5*f*x)/2] - 23310*Sin[3*e + (5*f*x)/2] + 13662*Sin[3*e + (7
*f*x)/2] + 4410*Sin[4*e + (7*f*x)/2] - 2008*Sin[4*e + (9*f*x)/2]))/(161280*
c^5*f)
```

fricas [A] time = 0.46, size = 212, normalized size = 1.29

$$\frac{1004\,a^2\cos\left(fx+e\right)^5-1811\,a^2\cos\left(fx+e\right)^4+797\,a^2\cos\left(fx+e\right)^3+1457\,a^2\cos\left(fx+e\right)^2-1661\,a^2\cos\left(fx+\right.}{315\left(c^5f\cos\left(fx+e\right)^4-4\,c^5f\cos\left(fx+e\right)^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] 1/315*(1004*a^2*cos(f*x + e)^5 - 1811*a^2*cos(f*x + e)^4 + 797*a^2*cos(f*x
+ e)^3 + 1457*a^2*cos(f*x + e)^2 - 1661*a^2*cos(f*x + e) + 494*a^2 + 315*(a
^2*f*x*cos(f*x + e)^4 - 4*a^2*f*x*cos(f*x + e)^3 + 6*a^2*f*x*cos(f*x + e)^2
 - 4*a^2*f*x*cos(f*x + e) + a^2*f*x)*sin(f*x + e))/((c^5*f*cos(f*x + e)^4 -
 4*c^5*f*cos(f*x + e)^3 + 6*c^5*f*cos(f*x + e)^2 - 4*c^5*f*cos(f*x + e) + c
^5*f)*sin(f*x + e))
```

giac [A] time = 0.44, size = 110, normalized size = 0.67

$$\frac{\frac{1260\left(fx+e\right)a^2}{c^5}+\frac{2520\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^8-840\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6+441\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-180\,a^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^2+35\,a^2}{c^5\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^9}}{1260\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x, algorithm="giac")
```

```
[Out] 1/1260*(1260*(f*x + e)*a^2/c^5 + (2520*a^2*tan(1/2*f*x + 1/2*e)^8 - 840*a^2
*tan(1/2*f*x + 1/2*e)^6 + 441*a^2*tan(1/2*f*x + 1/2*e)^4 - 180*a^2*tan(1/2*
f*x + 1/2*e)^2 + 35*a^2)/(c^5*tan(1/2*f*x + 1/2*e)^9))/f
```

maple [A] time = 0.84, size = 133, normalized size = 0.81

$$\frac{a^2}{36f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^9}-\frac{a^2}{7f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^7}+\frac{7a^2}{20f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}-\frac{2a^2}{3f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{2a^2}{f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^2\,\mathrm{ar}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x)
```

```
[Out] 1/36/f*a^2/c^5/tan(1/2*e+1/2*f*x)^9-1/7/f*a^2/c^5/tan(1/2*e+1/2*f*x)^7+7/20
/f*a^2/c^5/tan(1/2*e+1/2*f*x)^5-2/3/f*a^2/c^5/tan(1/2*e+1/2*f*x)^3+2/f*a^2/
c^5/tan(1/2*e+1/2*f*x)+2/f*a^2/c^5*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.45, size = 335, normalized size = 2.04

$$\frac{a^2\left(\frac{10080\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^5}-\frac{\left(\frac{270\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\frac{1008\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}+\frac{2730\sin\left(fx+e\right)^6}{\left(\cos\left(fx+e\right)+1\right)^6}-\frac{9765\sin\left(fx+e\right)^8}{\left(\cos\left(fx+e\right)+1\right)^8}-35\right)\left(\cos\left(fx+e\right)+1\right)^9}{c^5\sin\left(fx+e\right)^9}\right)-\frac{2\,a^2\left(\frac{180\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\right.}{}}{5040\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] 1/5040*(a^2*(10080*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^5 - (270*sin(f
*x + e)^2/(cos(f*x + e) + 1)^2 - 1008*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 +
 2730*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 9765*sin(f*x + e)^8/(cos(f*x +
e) + 1)^8 - 35)*(cos(f*x + e) + 1)^9/(c^5*sin(f*x + e)^9)) - 2*a^2*(180*sin
(f*x + e)^2/(cos(f*x + e) + 1)^2 - 378*sin(f*x + e)^4/(cos(f*x + e) + 1)^4
+ 420*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 315*sin(f*x + e)^8/(cos(f*x + e
) + 1)^8 - 35)*(cos(f*x + e) + 1)^9/(c^5*sin(f*x + e)^9) - 5*a^2*(18*sin(f*
x + e)^2/(cos(f*x + e) + 1)^2 - 42*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 + 63
*sin(f*x + e)^8/(cos(f*x + e) + 1)^8 - 7)*(cos(f*x + e) + 1)^9/(c^5*sin(f*x
 + e)^9))/f
```

mupad [B] time = 1.54, size = 146, normalized size = 0.89

$$\frac{a^2 \left(\frac{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^9}{36}-\frac{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^7\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{7}+\frac{7\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4}{20}-\frac{2\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6}{3}+2\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,\sin\left(\frac{e}{2}\right.\right.}{c^5\,f\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2/(c - c/cos(e + f*x))^5,x)
```

```
[Out] (a^2*(cos(e/2 + (f*x)/2)^9/36 + 2*cos(e/2 + (f*x)/2)*sin(e/2 + (f*x)/2)^8 +
 sin(e/2 + (f*x)/2)^9*(e + f*x) - (2*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2
)^6)/3 + (7*cos(e/2 + (f*x)/2)^5*sin(e/2 + (f*x)/2)^4)/20 - (cos(e/2 + (f*x
)/2)^7*sin(e/2 + (f*x)/2)^2)/7))/(c^5*f*sin(e/2 + (f*x)/2)^9)
```

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

$$-\frac{a^2 \left(\int \frac{2\sec\left(e+fx\right)}{\sec^5\left(e+fx\right)-5\sec^4\left(e+fx\right)+10\sec^3\left(e+fx\right)-10\sec^2\left(e+fx\right)+5\sec\left(e+fx\right)-1}\,dx+\int \frac{\sec^2\left(e+fx\right)}{\sec^5\left(e+fx\right)-5\sec^4\left(e+fx\right)+10\sec^3\left(e+fx\right)-10\,\mathrm{s}}\right.}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**5,x)
```

```
[Out] -a**2*(Integral(2*sec(e + f*x)/(sec(e + f*x)**5 - 5*sec(e + f*x)**4 + 10*se
c(e + f*x)**3 - 10*sec(e + f*x)**2 + 5*sec(e + f*x) - 1), x) + Integral(sec
(e + f*x)**2/(sec(e + f*x)**5 - 5*sec(e + f*x)**4 + 10*sec(e + f*x)**3 - 10
*sec(e + f*x)**2 + 5*sec(e + f*x) - 1), x) + Integral(1/(sec(e + f*x)**5 -
5*sec(e + f*x)**4 + 10*sec(e + f*x)**3 - 10*sec(e + f*x)**2 + 5*sec(e + f*x
) - 1), x))/c**5
```

3.11 $\int (a + a\sec(e + fx))^3 (c - c\sec(e + fx))^5 \, dx$

Optimal. Leaf size=188

$$-\frac{a^3c^5\tan^7(e+fx)}{7f}-\frac{a^3c^5\tan^5(e+fx)}{5f}+\frac{a^3c^5\tan^3(e+fx)}{3f}-\frac{a^3c^5\tan(e+fx)}{f}-\frac{5a^3c^5\tanh^{-1}(\sin(e+fx))}{8f}+\frac{a^3c^5\mathrm{ta}}{}$$

```
[Out] a^3*c^5*x-5/8*a^3*c^5*arctanh(sin(f*x+e))/f-a^3*c^5*tan(f*x+e)/f+5/8*a^3*c^
5*sec(f*x+e)*tan(f*x+e)/f+1/3*a^3*c^5*tan(f*x+e)^3/f-5/12*a^3*c^5*sec(f*x+e
)*tan(f*x+e)^3/f-1/5*a^3*c^5*tan(f*x+e)^5/f+1/3*a^3*c^5*sec(f*x+e)*tan(f*x+
e)^5/f-1/7*a^3*c^5*tan(f*x+e)^7/f
```

Rubi [A] time = 0.24, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {3904, 3886, 3473, 8, 2611, 3770, 2607, 30}

$$-\frac{a^3c^5\tan^7(e+fx)}{7f}-\frac{a^3c^5\tan^5(e+fx)}{5f}+\frac{a^3c^5\tan^3(e+fx)}{3f}-\frac{a^3c^5\tan(e+fx)}{f}-\frac{5a^3c^5\tanh^{-1}(\sin(e+fx))}{8f}+\frac{a^3c^5\mathrm{ta}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^5,x]
```

```
[Out] a^3*c^5*x - (5*a^3*c^5*ArcTanh[Sin[e + f*x]])/(8*f) - (a^3*c^5*Tan[e + f*x]
)/f + (5*a^3*c^5*Sec[e + f*x]*Tan[e + f*x])/(8*f) + (a^3*c^5*Tan[e + f*x]^3
)/(3*f) - (5*a^3*c^5*Sec[e + f*x]*Tan[e + f*x]^3)/(12*f) - (a^3*c^5*Tan[e +
 f*x]^5)/(5*f) + (a^3*c^5*Sec[e + f*x]*Tan[e + f*x]^5)/(3*f) - (a^3*c^5*Tan
[e + f*x]^7)/(7*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[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])
```

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 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 3770

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

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^5\,dx = -\left(\left(a^3c^3\right)\int (c-c\sec(e+fx))^2\tan^6(e+fx)\,dx\right)$$
$$= -\left(\left(a^3c^3\right)\int \left(c^2\tan^6(e+fx)-2c^2\sec(e+fx)\tan^6(e+fx)+c\right.\right.$$
$$= -\left(\left(a^3c^5\right)\int \tan^6(e+fx)\,dx\right)-\left(a^3c^5\right)\int \sec^2(e+fx)\tan^6(e+$$
$$= -\frac{a^3c^5\tan^5(e+fx)}{5f}+\frac{a^3c^5\sec(e+fx)\tan^5(e+fx)}{3f}+\left(a^3c^5\right)\int$$
$$= \frac{a^3c^5\tan^3(e+fx)}{3f}-\frac{5a^3c^5\sec(e+fx)\tan^3(e+fx)}{12f}-\frac{a^3c^5\tan}{5}$$
$$= -\frac{a^3c^5\tan(e+fx)}{f}+\frac{5a^3c^5\sec(e+fx)\tan(e+fx)}{8f}+\frac{a^3c^5\tan^3}{3}$$
$$= a^3c^5x-\frac{5a^3c^5\tanh^{-1}(\sin(e+fx))}{8f}-\frac{a^3c^5\tan(e+fx)}{f}+\frac{5a^3c^5}{}$$

Mathematica [A] time = 2.24, size = 189, normalized size = 1.01

$$a^3c^5\sec^7(e+fx)\left(-4200\sin(e+fx)+2975\sin(2(e+fx))-2184\sin(3(e+fx))+980\sin(4(e+fx))-2408\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (a^3*c^5*Sec[e + f*x]^7*(14700*(e + f*x)*Cos[e + f*x] - 16800*ArcTanh[Sin[e
 + f*x]]*Cos[e + f*x]^7 + 8820*e*Cos[3*(e + f*x)] + 8820*f*x*Cos[3*(e + f*x
)] + 2940*e*Cos[5*(e + f*x)] + 2940*f*x*Cos[5*(e + f*x)] + 420*e*Cos[7*(e +
 f*x)] + 420*f*x*Cos[7*(e + f*x)] - 4200*Sin[e + f*x] + 2975*Sin[2*(e + f*x
)] - 2184*Sin[3*(e + f*x)] + 980*Sin[4*(e + f*x)] - 2408*Sin[5*(e + f*x)] +
 1155*Sin[6*(e + f*x)] - 584*Sin[7*(e + f*x)]))/(26880*f)
```

fricas [A] time = 0.48, size = 195, normalized size = 1.04

$$1680\,a^3c^5fx\cos\left(fx+e\right)^7-525\,a^3c^5\cos\left(fx+e\right)^7\log\left(\sin\left(fx+e\right)+1\right)+525\,a^3c^5\cos\left(fx+e\right)^7\log\left(-\sin\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] 1/1680*(1680*a^3*c^5*f*x*cos(f*x + e)^7 - 525*a^3*c^5*cos(f*x + e)^7*log(si
n(f*x + e) + 1) + 525*a^3*c^5*cos(f*x + e)^7*log(-sin(f*x + e) + 1) - 2*(11
68*a^3*c^5*cos(f*x + e)^6 - 1155*a^3*c^5*cos(f*x + e)^5 - 256*a^3*c^5*cos(f
*x + e)^4 + 910*a^3*c^5*cos(f*x + e)^3 - 192*a^3*c^5*cos(f*x + e)^2 - 280*a
^3*c^5*cos(f*x + e) + 120*a^3*c^5)*sin(f*x + e))/(f*cos(f*x + e)^7)
```

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((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^5,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*(-2*a^3*c^5/2*(f*x+exp(1))/2-5*a^3*c^5/16*ln(abs(tan((f*x+exp(
1))/2)-1))+5*a^3*c^5/16*ln(abs(tan((f*x+exp(1))/2)+1))+(-1365*tan((f*x+exp(
1))/2)^13*a^3*c^5+9660*tan((f*x+exp(1))/2)^11*a^3*c^5-29673*tan((f*x+exp(1)
)/2)^9*a^3*c^5+21216*tan((f*x+exp(1))/2)^7*a^3*c^5-9863*tan((f*x+exp(1))/2)
^5*a^3*c^5+2660*tan((f*x+exp(1))/2)^3*a^3*c^5-315*tan((f*x+exp(1))/2)*a^3*c
^5)*1/840/(tan((f*x+exp(1))/2)^2-1)^7)
```

maple [A] time = 1.62, size = 211, normalized size = 1.12

$$-\frac{13c^5a^3\tan\left(fx+e\right)\left(\sec^3\left(fx+e\right)\right)}{12f}+\frac{11a^3c^5\sec\left(fx+e\right)\tan\left(fx+e\right)}{8f}-\frac{5c^5a^3\ln\left(\sec\left(fx+e\right)+\tan\left(fx+e\right)\right)}{8f}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^5,x)
```

```
[Out] -13/12/f*c^5*a^3*tan(f*x+e)*sec(f*x+e)^3+11/8*a^3*c^5*sec(f*x+e)*tan(f*x+e)
/f-5/8/f*c^5*a^3*ln(sec(f*x+e)+tan(f*x+e))-146/105*a^3*c^5*tan(f*x+e)/f+a^3
*c^5*x+1/f*a^3*c^5*e+8/35/f*c^5*a^3*tan(f*x+e)*sec(f*x+e)^4+32/105/f*c^5*a^
3*tan(f*x+e)*sec(f*x+e)^2+1/3/f*c^5*a^3*tan(f*x+e)*sec(f*x+e)^5-1/7/f*c^5*a
^3*tan(f*x+e)*sec(f*x+e)^6
```

maxima [B] time = 0.34, size = 356, normalized size = 1.89

$$-\frac{48\left(5\tan\left(fx+e\right)^7+21\tan\left(fx+e\right)^5+35\tan\left(fx+e\right)^3+35\tan\left(fx+e\right)\right)a^3c^5-224\left(3\tan\left(fx+e\right)^5+10\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] -1/1680*(48*(5*tan(f*x + e)^7 + 21*tan(f*x + e)^5 + 35*tan(f*x + e)^3 + 35*
tan(f*x + e))*a^3*c^5 - 224*(3*tan(f*x + e)^5 + 10*tan(f*x + e)^3 + 15*tan(
f*x + e))*a^3*c^5 - 1680*(f*x + e)*a^3*c^5 + 35*a^3*c^5*(2*(15*sin(f*x + e)
^5 - 40*sin(f*x + e)^3 + 33*sin(f*x + e))/(sin(f*x + e)^6 - 3*sin(f*x + e)^
4 + 3*sin(f*x + e)^2 - 1) - 15*log(sin(f*x + e) + 1) + 15*log(sin(f*x + e)
- 1)) - 630*a^3*c^5*(2*(3*sin(f*x + e)^3 - 5*sin(f*x + e))/(sin(f*x + e)^4
- 2*sin(f*x + e)^2 + 1) - 3*log(sin(f*x + e) + 1) + 3*log(sin(f*x + e) - 1)
) + 2520*a^3*c^5*(2*sin(f*x + e)/(sin(f*x + e)^2 - 1) - log(sin(f*x + e) +
1) + log(sin(f*x + e) - 1)) + 3360*a^3*c^5*log(sec(f*x + e) + tan(f*x + e))
 + 3360*a^3*c^5*tan(f*x + e))/f
```

mupad [B] time = 2.62, size = 259, normalized size = 1.38

$$\frac{\frac{13\,a^3\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{13}}{4}-23\,a^3\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{11}+\frac{1413\,a^3\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^9}{20}-\frac{1768\,a^3\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^7}{35}+\frac{1409\,a^3\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{60}-\frac{19}{}}{f\,\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{14}-7\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{12}+21\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{10}-35\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^8+35\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6-21\,\tan\left(\frac{e}{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^5,x)
```

```
[Out] ((1409*a^3*c^5*tan(e/2 + (f*x)/2)^5)/60 - (19*a^3*c^5*tan(e/2 + (f*x)/2)^3)
/3 - (1768*a^3*c^5*tan(e/2 + (f*x)/2)^7)/35 + (1413*a^3*c^5*tan(e/2 + (f*x)
/2)^9)/20 - 23*a^3*c^5*tan(e/2 + (f*x)/2)^11 + (13*a^3*c^5*tan(e/2 + (f*x)/
2)^13)/4 + (3*a^3*c^5*tan(e/2 + (f*x)/2))/4)/(f*(7*tan(e/2 + (f*x)/2)^2 - 2
1*tan(e/2 + (f*x)/2)^4 + 35*tan(e/2 + (f*x)/2)^6 - 35*tan(e/2 + (f*x)/2)^8
+ 21*tan(e/2 + (f*x)/2)^10 - 7*tan(e/2 + (f*x)/2)^12 + tan(e/2 + (f*x)/2)^1
4 - 1)) + a^3*c^5*x - (5*a^3*c^5*atanh(tan(e/2 + (f*x)/2)))/(4*f)
```

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

$$-a^3c^5\left(\int(-1)\,dx+\int 2\sec\left(e+fx\right)dx+\int 2\sec^2\left(e+fx\right)dx+\int\left(-6\sec^3\left(e+fx\right)\right)dx+\int 6\sec^5\left(e+f\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3*(c-c*sec(f*x+e))**5,x)
```

```
[Out] -a**3*c**5*(Integral(-1, x) + Integral(2*sec(e + f*x), x) + Integral(2*sec(
e + f*x)**2, x) + Integral(-6*sec(e + f*x)**3, x) + Integral(6*sec(e + f*x)
**5, x) + Integral(-2*sec(e + f*x)**6, x) + Integral(-2*sec(e + f*x)**7, x)
 + Integral(sec(e + f*x)**8, x))
```

3.12 $\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^4\,dx$

Optimal. Leaf size=132

$$-\frac{5a^3c^4\tanh^{-1}(\sin(e+fx))}{16f}-\frac{a^3\tan^5(e+fx)\left(6c^4-5c^4\sec(e+fx)\right)}{30f}+\frac{a^3\tan^3(e+fx)\left(8c^4-5c^4\sec(e+fx)\right)}{24f}-\frac{a^3}{}-$$

```
[Out] a^3*c^4*x-5/16*a^3*c^4*arctanh(sin(f*x+e))/f-1/16*a^3*(16*c^4-5*c^4*sec(f*x
+e))*tan(f*x+e)/f+1/24*a^3*(8*c^4-5*c^4*sec(f*x+e))*tan(f*x+e)^3/f-1/30*a^3
*(6*c^4-5*c^4*sec(f*x+e))*tan(f*x+e)^5/f
```

Rubi [A] time = 0.15, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3904, 3881, 3770}

$$-\frac{5a^3c^4\tanh^{-1}(\sin(e+fx))}{16f}-\frac{a^3\tan^5(e+fx)\left(6c^4-5c^4\sec(e+fx)\right)}{30f}+\frac{a^3\tan^3(e+fx)\left(8c^4-5c^4\sec(e+fx)\right)}{24f}-\frac{a^3}{}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^4,x]
```

```
[Out] a^3*c^4*x - (5*a^3*c^4*ArcTanh[Sin[e + f*x]])/(16*f) - (a^3*(16*c^4 - 5*c^4
*Sec[e + f*x])*Tan[e + f*x])/(16*f) + (a^3*(8*c^4 - 5*c^4*Sec[e + f*x])*Tan
[e + f*x]^3)/(24*f) - (a^3*(6*c^4 - 5*c^4*Sec[e + f*x])*Tan[e + f*x]^5)/(30
*f)
```

Rule 3770

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

Rule 3881

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[(e*(e*Cot[c + d*x])^(m - 1)*(a*m + b*(m - 1)*Csc[c
 + d*x]))/(d*m*(m - 1)), x] - Dist[e^2/m, Int[(e*Cot[c + d*x])^(m - 2)*(a*m
 + b*(m - 1)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && GtQ[m, 1
]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^4\,dx = -\left(\left(a^3c^3\right)\int (c-c\sec(e+fx))\tan^6(e+fx)\,dx\right)$$
$$= -\frac{a^3\left(6c^4-5c^4\sec(e+fx)\right)\tan^5(e+fx)}{30f}+\frac{1}{6}\left(a^3c^3\right)\int (6c-5c$$
$$= \frac{a^3\left(8c^4-5c^4\sec(e+fx)\right)\tan^3(e+fx)}{24f}-\frac{a^3\left(6c^4-5c^4\sec(e+\right.}{30}$$
$$= -\frac{a^3\left(16c^4-5c^4\sec(e+fx)\right)\tan(e+fx)}{16f}+\frac{a^3\left(8c^4-5c^4\sec(e\right.}{2}$$
$$= a^3c^4x-\frac{a^3\left(16c^4-5c^4\sec(e+fx)\right)\tan(e+fx)}{16f}+\frac{a^3\left(8c^4-5c^4\right.}{}$$
$$= a^3c^4x-\frac{5a^3c^4\tanh^{-1}(\sin(e+fx))}{16f}-\frac{a^3\left(16c^4-5c^4\sec(e+fx\right.}{16f}$$

Mathematica [A] time = 1.87, size = 165, normalized size = 1.25

$$a^3c^4\sec^6(e+fx)\left(450\sin(e+fx)-600\sin(2(e+fx))-25\sin(3(e+fx))-384\sin(4(e+fx))+165\sin(5(e\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (a^3*c^4*Sec[e + f*x]^6*(1200*e + 1200*f*x - 1200*ArcTanh[Sin[e + f*x]]*Cos
[e + f*x]^6 + 1800*(e + f*x)*Cos[2*(e + f*x)] + 720*e*Cos[4*(e + f*x)] + 72
0*f*x*Cos[4*(e + f*x)] + 120*e*Cos[6*(e + f*x)] + 120*f*x*Cos[6*(e + f*x)]
+ 450*Sin[e + f*x] - 600*Sin[2*(e + f*x)] - 25*Sin[3*(e + f*x)] - 384*Sin[4
*(e + f*x)] + 165*Sin[5*(e + f*x)] - 184*Sin[6*(e + f*x)]))/(3840*f)
```

fricas [A] time = 0.53, size = 179, normalized size = 1.36

$$480\,a^3c^4fx\cos\left(fx+e\right)^6-75\,a^3c^4\cos\left(fx+e\right)^6\log\left(\sin\left(fx+e\right)+1\right)+75\,a^3c^4\cos\left(fx+e\right)^6\log\left(-\sin\left(fx\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] 1/480*(480*a^3*c^4*f*x*cos(f*x + e)^6 - 75*a^3*c^4*cos(f*x + e)^6*log(sin(f
*x + e) + 1) + 75*a^3*c^4*cos(f*x + e)^6*log(-sin(f*x + e) + 1) - 2*(368*a^
3*c^4*cos(f*x + e)^5 - 165*a^3*c^4*cos(f*x + e)^4 - 176*a^3*c^4*cos(f*x + e
)^3 + 130*a^3*c^4*cos(f*x + e)^2 + 48*a^3*c^4*cos(f*x + e) - 40*a^3*c^4)*si
n(f*x + e))/(f*cos(f*x + e)^6)
```

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((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)2/f*(2*a^3*c^4/2*(f*x+exp(1))/2+5*a^3*c^4/32*ln(abs(tan((f*x+exp(1)
```

```
)/2)-1))-5*a^3*c^4/32*ln(abs(tan((f*x+exp(1))/2)+1))-(-315*tan((f*x+exp(1))
/2)^11*a^3*c^4+1945*tan((f*x+exp(1))/2)^9*a^3*c^4-5118*tan((f*x+exp(1))/2)^
7*a^3*c^4+3138*tan((f*x+exp(1))/2)^5*a^3*c^4-1095*tan((f*x+exp(1))/2)^3*a^3
*c^4+165*tan((f*x+exp(1))/2)*a^3*c^4)*1/240/(tan((f*x+exp(1))/2)^2-1)^6)
```

maple [A] time = 1.65, size = 186, normalized size = 1.41

$$-\frac{23a^3c^4\tan\left(fx+e\right)}{15f}+\frac{11c^4a^3\tan\left(fx+e\right)\left(\sec^2\left(fx+e\right)\right)}{15f}+\frac{11c^4a^3\sec\left(fx+e\right)\tan\left(fx+e\right)}{16f}-\frac{5c^4a^3\ln\left(\sec\left(fx+\right.\right.}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^4,x)
```

```
[Out] -23/15*a^3*c^4*tan(f*x+e)/f+11/15/f*c^4*a^3*tan(f*x+e)*sec(f*x+e)^2+11/16/f
*c^4*a^3*sec(f*x+e)*tan(f*x+e)-5/16/f*c^4*a^3*ln(sec(f*x+e)+tan(f*x+e))+a^3
*c^4*x+1/f*a^3*c^4*e-13/24/f*c^4*a^3*tan(f*x+e)*sec(f*x+e)^3-1/5/f*c^4*a^3*
tan(f*x+e)*sec(f*x+e)^4+1/6/f*c^4*a^3*tan(f*x+e)*sec(f*x+e)^5
```

maxima [B] time = 0.34, size = 334, normalized size = 2.53

$$-\frac{32\left(3\tan\left(fx+e\right)^5+10\tan\left(fx+e\right)^3+15\tan\left(fx+e\right)\right)a^3c^4-480\left(\tan\left(fx+e\right)^3+3\tan\left(fx+e\right)\right)a^3c^4-48}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] -1/480*(32*(3*tan(f*x + e)^5 + 10*tan(f*x + e)^3 + 15*tan(f*x + e))*a^3*c^4
 - 480*(tan(f*x + e)^3 + 3*tan(f*x + e))*a^3*c^4 - 480*(f*x + e)*a^3*c^4 +
5*a^3*c^4*(2*(15*sin(f*x + e)^5 - 40*sin(f*x + e)^3 + 33*sin(f*x + e))/(sin
(f*x + e)^6 - 3*sin(f*x + e)^4 + 3*sin(f*x + e)^2 - 1) - 15*log(sin(f*x + e
) + 1) + 15*log(sin(f*x + e) - 1)) - 90*a^3*c^4*(2*(3*sin(f*x + e)^3 - 5*si
n(f*x + e))/(sin(f*x + e)^4 - 2*sin(f*x + e)^2 + 1) - 3*log(sin(f*x + e) +
1) + 3*log(sin(f*x + e) - 1)) + 360*a^3*c^4*(2*sin(f*x + e)/(sin(f*x + e)^2
 - 1) - log(sin(f*x + e) + 1) + log(sin(f*x + e) - 1)) + 480*a^3*c^4*log(se
c(f*x + e) + tan(f*x + e)) + 1440*a^3*c^4*tan(f*x + e))/f
```

mupad [B] time = 2.59, size = 227, normalized size = 1.72

$$a^3\,c^4\,x+\frac{\frac{21\,a^3\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{11}}{8}-\frac{389\,a^3\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^9}{24}+\frac{853\,a^3\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^7}{20}-\frac{523\,a^3\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{20}+\frac{73\,a^3\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{8}-\frac{11\,a^3}{}}{f\,\left({\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{12}-6\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^{10}+15\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^8-20\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^6+15\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^4-6\,\tan\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^4,x)
```

```
[Out] a^3*c^4*x + ((73*a^3*c^4*tan(e/2 + (f*x)/2)^3)/8 - (523*a^3*c^4*tan(e/2 + (
f*x)/2)^5)/20 + (853*a^3*c^4*tan(e/2 + (f*x)/2)^7)/20 - (389*a^3*c^4*tan(e/
2 + (f*x)/2)^9)/24 + (21*a^3*c^4*tan(e/2 + (f*x)/2)^11)/8 - (11*a^3*c^4*tan
(e/2 + (f*x)/2))/8)/(f*(15*tan(e/2 + (f*x)/2)^4 - 6*tan(e/2 + (f*x)/2)^2 -
20*tan(e/2 + (f*x)/2)^6 + 15*tan(e/2 + (f*x)/2)^8 - 6*tan(e/2 + (f*x)/2)^10
 + tan(e/2 + (f*x)/2)^12 + 1)) - (5*a^3*c^4*atanh(tan(e/2 + (f*x)/2)))/(8*f
)
```

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

$$a^3c^4\left(\int 1\,dx+\int\left(-\sec\left(e+fx\right)\right)dx+\int\left(-3\sec^2\left(e+fx\right)\right)dx+\int 3\sec^3\left(e+fx\right)dx+\int 3\sec^4\left(e+fx\right)dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3*(c-c*sec(f*x+e))**4,x)
```

```
[Out] a**3*c**4*(Integral(1, x) + Integral(-sec(e + f*x), x) + Integral(-3*sec(e
+ f*x)**2, x) + Integral(3*sec(e + f*x)**3, x) + Integral(3*sec(e + f*x)**4
, x) + Integral(-3*sec(e + f*x)**5, x) + Integral(-sec(e + f*x)**6, x) + In
tegral(sec(e + f*x)**7, x))
```

3.13 $\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^3\,dx$

Optimal. Leaf size=68

$$-\frac{a^3c^3\tan^5(e+fx)}{5f}+\frac{a^3c^3\tan^3(e+fx)}{3f}-\frac{a^3c^3\tan(e+fx)}{f}+a^3c^3x$$

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

Rubi [A] time = 0.07, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3904, 3473, 8}

$$-\frac{a^3c^3\tan^5(e+fx)}{5f}+\frac{a^3c^3\tan^3(e+fx)}{3f}-\frac{a^3c^3\tan(e+fx)}{f}+a^3c^3x$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^3,x]
```

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

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 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^3\,dx &= -\left(\left(a^3c^3\right)\int \tan^6(e+fx)\,dx\right)\\
&= -\frac{a^3c^3\tan^5(e+fx)}{5f}+\left(a^3c^3\right)\int \tan^4(e+fx)\,dx\\
&= \frac{a^3c^3\tan^3(e+fx)}{3f}-\frac{a^3c^3\tan^5(e+fx)}{5f}-\left(a^3c^3\right)\int \tan^2(e+fx)\,dx\\
&= -\frac{a^3c^3\tan(e+fx)}{f}+\frac{a^3c^3\tan^3(e+fx)}{3f}-\frac{a^3c^3\tan^5(e+fx)}{5f}+\left(a^3c^3\right)\\
&= a^3c^3x-\frac{a^3c^3\tan(e+fx)}{f}+\frac{a^3c^3\tan^3(e+fx)}{3f}-\frac{a^3c^3\tan^5(e+fx)}{5f}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 61, normalized size = 0.90

$$-a^3c^3\left(-\frac{\tan^{-1}(\tan(e+fx))}{f}+\frac{\tan^5(e+fx)}{5f}-\frac{\tan^3(e+fx)}{3f}+\frac{\tan(e+fx)}{f}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^3,x]
```

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

fricas [A] time = 0.46, size = 81, normalized size = 1.19

$$\frac{15\,a^3c^3fx\cos\left(fx+e\right)^5-\left(23\,a^3c^3\cos\left(fx+e\right)^4-11\,a^3c^3\cos\left(fx+e\right)^2+3\,a^3c^3\right)\sin\left(fx+e\right)}{15\,f\cos\left(fx+e\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(15*a^3*c^3*f*x*cos(f*x + e)^5 - (23*a^3*c^3*cos(f*x + e)^4 - 11*a^3*c
^3*cos(f*x + e)^2 + 3*a^3*c^3)*sin(f*x + e))/(f*cos(f*x + e)^5)
```

giac [A] time = 0.55, size = 69, normalized size = 1.01

$$-\frac{3\,a^3c^3\tan\left(fx+e\right)^5-5\,a^3c^3\tan\left(fx+e\right)^3-15\left(fx+e\right)a^3c^3+15\,a^3c^3\tan\left(fx+e\right)}{15\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^3,x, algorithm="giac")
```

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

maple [A] time = 1.06, size = 93, normalized size = 1.37

$$\frac{-3a^3c^3\tan\left(fx+e\right)+\left(fx+e\right)a^3c^3-3a^3c^3\left(-\frac{2}{3}-\frac{\left(\sec^2\left(fx+e\right)\right)}{3}\right)\tan\left(fx+e\right)+a^3c^3\left(-\frac{8}{15}-\frac{\left(\sec^4\left(fx+e\right)\right)}{5}-\frac{4\left(\sec^2\left(\right.\right.}{15}\right.}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/f*(-3*a^3*c^3*tan(f*x+e)+(f*x+e)*a^3*c^3-3*a^3*c^3*(-2/3-1/3*sec(f*x+e)^2
)*tan(f*x+e)+a^3*c^3*(-8/15-1/5*sec(f*x+e)^4-4/15*sec(f*x+e)^2)*tan(f*x+e))
```

maxima [A] time = 0.32, size = 94, normalized size = 1.38

$$-\frac{\left(3\,\tan\left(fx+e\right)^5+10\,\tan\left(fx+e\right)^3+15\,\tan\left(fx+e\right)\right)a^3c^3-15\left(\tan\left(fx+e\right)^3+3\,\tan\left(fx+e\right)\right)a^3c^3-15\left(\right.}{15\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] -1/15*((3*tan(f*x + e)^5 + 10*tan(f*x + e)^3 + 15*tan(f*x + e))*a^3*c^3 - 1
5*(tan(f*x + e)^3 + 3*tan(f*x + e))*a^3*c^3 - 15*(f*x + e)*a^3*c^3 + 45*a^3
*c^3*tan(f*x + e))/f
```

mupad [B] time = 4.96, size = 122, normalized size = 1.79

$$a^3\,c^3\,x+\frac{2\,a^3\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^9-\frac{32\,a^3\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^7}{3}+\frac{356\,a^3\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{15}-\frac{32\,a^3\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{3}+2\,a^3\,c^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{f\,\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2-1\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^3,x)
```

```
[Out] a^3*c^3*x + ((356*a^3*c^3*tan(e/2 + (f*x)/2)^5)/15 - (32*a^3*c^3*tan(e/2 +
(f*x)/2)^3)/3 - (32*a^3*c^3*tan(e/2 + (f*x)/2)^7)/3 + 2*a^3*c^3*tan(e/2 + (
f*x)/2)^9 + 2*a^3*c^3*tan(e/2 + (f*x)/2))/(f*(tan(e/2 + (f*x)/2)^2 - 1)^5)
```

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

$$-a^3c^3\left(\int(-1)\,dx+\int 3\sec^2\left(e+fx\right)dx+\int\left(-3\sec^4\left(e+fx\right)\right)dx+\int\sec^6\left(e+fx\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3*(c-c*sec(f*x+e))**3,x)
```

```
[Out] -a**3*c**3*(Integral(-1, x) + Integral(3*sec(e + f*x)**2, x) + Integral(-3*
sec(e + f*x)**4, x) + Integral(sec(e + f*x)**6, x))
```

3.14 $\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^2\,dx$

Optimal. Leaf size=97

$$\frac{3a^3c^2\tanh^{-1}(\sin(e+fx))}{8f}+\frac{c^2\tan^3(e+fx)\left(3a^3\sec(e+fx)+4a^3\right)}{12f}-\frac{c^2\tan(e+fx)\left(3a^3\sec(e+fx)+8a^3\right)}{8f}+a$$

```
[Out] a^3*c^2*x+3/8*a^3*c^2*arctanh(sin(f*x+e))/f-1/8*c^2*(8*a^3+3*a^3*sec(f*x+e)
)*tan(f*x+e)/f+1/12*c^2*(4*a^3+3*a^3*sec(f*x+e))*tan(f*x+e)^3/f
```

Rubi [A] time = 0.11, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {3904, 3881, 3770}

$$\frac{3a^3c^2\tanh^{-1}(\sin(e+fx))}{8f}+\frac{c^2\tan^3(e+fx)\left(3a^3\sec(e+fx)+4a^3\right)}{12f}-\frac{c^2\tan(e+fx)\left(3a^3\sec(e+fx)+8a^3\right)}{8f}+a$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] a^3*c^2*x + (3*a^3*c^2*ArcTanh[Sin[e + f*x]])/(8*f) - (c^2*(8*a^3 + 3*a^3*S
ec[e + f*x])*Tan[e + f*x])/(8*f) + (c^2*(4*a^3 + 3*a^3*Sec[e + f*x])*Tan[e
+ f*x]^3)/(12*f)
```

Rule 3770

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

Rule 3881

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[(e*(e*Cot[c + d*x])^(m - 1)*(a*m + b*(m - 1)*Csc[c
 + d*x]))/(d*m*(m - 1)), x] - Dist[e^2/m, Int[(e*Cot[c + d*x])^(m - 2)*(a*m
 + b*(m - 1)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && GtQ[m, 1
]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a + a\sec(e + fx))^3(c - c\sec(e + fx))^2\,dx = \left(a^2c^2\right)\int (a + a\sec(e + fx))\tan^4(e + fx)\,dx$$
$$= \frac{c^2\left(4a^3 + 3a^3\sec(e + fx)\right)\tan^3(e + fx)}{12f} - \frac{1}{4}\left(a^2c^2\right)\int (4a + 3a\sec$$
$$= -\frac{c^2\left(8a^3 + 3a^3\sec(e + fx)\right)\tan(e + fx)}{8f} + \frac{c^2\left(4a^3 + 3a^3\sec(e + f\right.}{12f}$$
$$= a^3c^2x - \frac{c^2\left(8a^3 + 3a^3\sec(e + fx)\right)\tan(e + fx)}{8f} + \frac{c^2\left(4a^3 + 3a^3\text{se}\right.}{}$$
$$= a^3c^2x + \frac{3a^3c^2\tanh^{-1}(\sin(e + fx))}{8f} - \frac{c^2\left(8a^3 + 3a^3\sec(e + fx)\right)\text{ta}}{8f}$$

Mathematica [A] time = 0.80, size = 122, normalized size = 1.26

$$\frac{a^3c^2\sec^4(e + fx)\left(18\sin(e + fx) - 32\sin(2(e + fx)) - 30\sin(3(e + fx)) - 32\sin(4(e + fx)) + 96(e + fx)\cos(2(e\right.}{192f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (a^3*c^2*Sec[e + f*x]^4*(72*e + 72*f*x + 72*ArcTanh[Sin[e + f*x]]*Cos[e + f
*x]^4 + 96*(e + f*x)*Cos[2*(e + f*x)] + 24*e*Cos[4*(e + f*x)] + 24*f*x*Cos[
4*(e + f*x)] + 18*Sin[e + f*x] - 32*Sin[2*(e + f*x)] - 30*Sin[3*(e + f*x)]
- 32*Sin[4*(e + f*x)]))/(192*f)
```

fricas [A] time = 0.50, size = 147, normalized size = 1.52

$$\frac{48\,a^3c^2fx\cos\left(fx + e\right)^4 + 9\,a^3c^2\cos\left(fx + e\right)^4\log\left(\sin\left(fx + e\right) + 1\right) - 9\,a^3c^2\cos\left(fx + e\right)^4\log\left(-\sin\left(fx + e\right) + \right.}{48\,f\cos\left(fx + e\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/48*(48*a^3*c^2*f*x*cos(f*x + e)^4 + 9*a^3*c^2*cos(f*x + e)^4*log(sin(f*x
+ e) + 1) - 9*a^3*c^2*cos(f*x + e)^4*log(-sin(f*x + e) + 1) - 2*(32*a^3*c^2
*cos(f*x + e)^3 + 15*a^3*c^2*cos(f*x + e)^2 - 8*a^3*c^2*cos(f*x + e) - 6*a^
3*c^2)*sin(f*x + e))/(f*cos(f*x + e)^4)
```

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((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)2/f*(2*a^3*c^2/2*(f*x+exp(1))/2-3*a^3*c^2/16*ln(abs(tan((f*x+exp(1)
)/2)-1))+3*a^3*c^2/16*ln(abs(tan((f*x+exp(1))/2)+1))+(15*tan((f*x+exp(1))/2
)^7*a^3*c^2-71*tan((f*x+exp(1))/2)^5*a^3*c^2+137*tan((f*x+exp(1))/2)^3*a^3*
c^2-33*tan((f*x+exp(1))/2)*a^3*c^2)*1/24/(tan((f*x+exp(1))/2)^2-1)^4)
```

maple [A] time = 1.25, size = 136, normalized size = 1.40

$$-\frac{4a^3c^2\tan\left(fx+e\right)}{3f}+\frac{3c^2a^3\ln\left(\sec\left(fx+e\right)+\tan\left(fx+e\right)\right)}{8f}+a^3c^2x+\frac{a^3c^2e}{f}-\frac{5c^2a^3\sec\left(fx+e\right)\tan\left(fx+e\right)}{8f}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^2,x)
```

```
[Out] -4/3*a^3*c^2*tan(f*x+e)/f+3/8/f*c^2*a^3*ln(sec(f*x+e)+tan(f*x+e))+a^3*c^2*x
+1/f*a^3*c^2*e-5/8/f*c^2*a^3*sec(f*x+e)*tan(f*x+e)+1/3/f*c^2*a^3*tan(f*x+e)
*sec(f*x+e)^2+1/4/f*c^2*a^3*tan(f*x+e)*sec(f*x+e)^3
```

maxima [B] time = 0.34, size = 203, normalized size = 2.09

$$16\left(\tan\left(fx+e\right)^3+3\tan\left(fx+e\right)\right)a^3c^2+48\left(fx+e\right)a^3c^2-3a^3c^2\left(\frac{2\left(3\sin\left(fx+e\right)^3-5\sin\left(fx+e\right)\right)}{\sin\left(fx+e\right)^4-2\sin\left(fx+e\right)^2+1}-3\log\left(\sin\left(fx+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/48*(16*(tan(f*x + e)^3 + 3*tan(f*x + e))*a^3*c^2 + 48*(f*x + e)*a^3*c^2 -
 3*a^3*c^2*(2*(3*sin(f*x + e)^3 - 5*sin(f*x + e))/(sin(f*x + e)^4 - 2*sin(f
*x + e)^2 + 1) - 3*log(sin(f*x + e) + 1) + 3*log(sin(f*x + e) - 1)) + 24*a^
3*c^2*(2*sin(f*x + e)/(sin(f*x + e)^2 - 1) - log(sin(f*x + e) + 1) + log(si
n(f*x + e) - 1)) + 48*a^3*c^2*log(sec(f*x + e) + tan(f*x + e)) - 96*a^3*c^2
*tan(f*x + e))/f
```

mupad [B] time = 2.13, size = 163, normalized size = 1.68

$$\frac{\frac{5\,a^3\,c^2\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^7}{4}-\frac{71\,a^3\,c^2\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{12}+\frac{137\,a^3\,c^2\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{12}-\frac{11\,a^3\,c^2\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{4}}{f\,\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^8-4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6+6\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4-4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2+1\right)}+a^3\,c^2\,x+\frac{3\,a^3\,c^2\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\right.\right.}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^2,x)
```

```
[Out] ((137*a^3*c^2*tan(e/2 + (f*x)/2)^3)/12 - (71*a^3*c^2*tan(e/2 + (f*x)/2)^5)/
12 + (5*a^3*c^2*tan(e/2 + (f*x)/2)^7)/4 - (11*a^3*c^2*tan(e/2 + (f*x)/2))/4
)/(f*(6*tan(e/2 + (f*x)/2)^4 - 4*tan(e/2 + (f*x)/2)^2 - 4*tan(e/2 + (f*x)/2
)^6 + tan(e/2 + (f*x)/2)^8 + 1)) + a^3*c^2*x + (3*a^3*c^2*atanh(tan(e/2 + (
f*x)/2)))/(4*f)
```

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

$$a^3c^2\left(\int 1\,dx+\int\sec\left(e+fx\right)dx+\int\left(-2\sec^2\left(e+fx\right)\right)dx+\int\left(-2\sec^3\left(e+fx\right)\right)dx+\int\sec^4\left(e+fx\right)dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3*(c-c*sec(f*x+e))**2,x)
```

```
[Out] a**3*c**2*(Integral(1, x) + Integral(sec(e + f*x), x) + Integral(-2*sec(e +
 f*x)**2, x) + Integral(-2*sec(e + f*x)**3, x) + Integral(sec(e + f*x)**4,
x) + Integral(sec(e + f*x)**5, x))
```

3.15 $\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))\,dx$

Optimal. Leaf size=77

$$-\frac{a^3c\tan^3(e+fx)}{3f}-\frac{a^3c\tan(e+fx)}{f}+\frac{a^3c\tanh^{-1}(\sin(e+fx))}{f}-\frac{a^3c\tan(e+fx)\sec(e+fx)}{f}+a^3cx$$

```
[Out] a^3*c*x+a^3*c*arctanh(sin(f*x+e))/f-a^3*c*tan(f*x+e)/f-a^3*c*sec(f*x+e)*tan
(f*x+e)/f-1/3*a^3*c*tan(f*x+e)^3/f
```

Rubi [A] time = 0.15, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3904, 3886, 3473, 8, 2611, 3770, 2607, 30}

$$-\frac{a^3c\tan^3(e+fx)}{3f}-\frac{a^3c\tan(e+fx)}{f}+\frac{a^3c\tanh^{-1}(\sin(e+fx))}{f}-\frac{a^3c\tan(e+fx)\sec(e+fx)}{f}+a^3cx$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x]),x]
```

```
[Out] a^3*c*x + (a^3*c*ArcTanh[Sin[e + f*x]])/f - (a^3*c*Tan[e + f*x])/f - (a^3*c
*Sec[e + f*x]*Tan[e + f*x])/f - (a^3*c*Tan[e + f*x]^3)/(3*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[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])
```

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 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 3770

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

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a + a\sec(e+fx))^3 (c - c\sec(e+fx))\,dx = -\left((ac)\int (a + a\sec(e+fx))^2 \tan^2(e+fx)\,dx\right)$$
$$= -\left((ac)\int \left(a^2\tan^2(e+fx) + 2a^2\sec(e+fx)\tan^2(e+fx) + a^2 s\right.$$
$$= -\left(\left(a^3c\right)\int \tan^2(e+fx)\,dx\right) - \left(a^3c\right)\int \sec^2(e+fx)\tan^2(e+fx$$
$$= -\frac{a^3c\tan(e+fx)}{f} - \frac{a^3c\sec(e+fx)\tan(e+fx)}{f} + \left(a^3c\right)\int 1\,dx$$
$$= a^3cx + \frac{a^3c\tanh^{-1}(\sin(e+fx))}{f} - \frac{a^3c\tan(e+fx)}{f} - \frac{a^3c\sec(e+}{}$$

Mathematica [A] time = 0.45, size = 101, normalized size = 1.31

$$\frac{a^3c\sec^3(e+fx)\left(-6\sin(e+fx) - 6\sin(2(e+fx)) - 2\sin(3(e+fx)) + 9(e+fx)\cos(e+fx) + 3e\cos(3(e+f\right.}{12f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x]),x]
```

```
[Out] (a^3*c*Sec[e + f*x]^3*(9*(e + f*x)*Cos[e + f*x] + 12*ArcTanh[Sin[e + f*x]]*
Cos[e + f*x]^3 + 3*e*Cos[3*(e + f*x)] + 3*f*x*Cos[3*(e + f*x)] - 6*Sin[e +
f*x] - 6*Sin[2*(e + f*x)] - 2*Sin[3*(e + f*x)]))/(12*f)
```

fricas [A] time = 0.45, size = 118, normalized size = 1.53

$$\frac{6\,a^3cfx\cos\left(fx+e\right)^3 + 3\,a^3c\cos\left(fx+e\right)^3\log\left(\sin\left(fx+e\right)+1\right) - 3\,a^3c\cos\left(fx+e\right)^3\log\left(-\sin\left(fx+e\right)+1\right.}{6\,f\cos\left(fx+e\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/6*(6*a^3*c*f*x*cos(f*x + e)^3 + 3*a^3*c*cos(f*x + e)^3*log(sin(f*x + e) +
 1) - 3*a^3*c*cos(f*x + e)^3*log(-sin(f*x + e) + 1) - 2*(2*a^3*c*cos(f*x +
e)^2 + 3*a^3*c*cos(f*x + e) + a^3*c)*sin(f*x + e))/(f*cos(f*x + e)^3)
```

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((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*(-2*a^3*c/2*(f*x+exp(1))/2+a^3*c/2*ln(abs(tan((f*x+exp(1))/2)-
1))-a^3*c/2*ln(abs(tan((f*x+exp(1))/2)+1))+(2*tan((f*x+exp(1))/2)^3*a^3*c-6
*tan((f*x+exp(1))/2)*a^3*c)*1/3/(tan((f*x+exp(1))/2)^2-1)^3)
```

maple [A] time = 0.86, size = 98, normalized size = 1.27

$$\frac{a^3c\ln\left(\sec\left(fx+e\right)+\tan\left(fx+e\right)\right)}{f}+a^3cx+\frac{a^3ce}{f}-\frac{a^3c\sec\left(fx+e\right)\tan\left(fx+e\right)}{f}-\frac{2a^3c\tan\left(fx+e\right)}{3f}-\frac{a^3c\tan\left(fx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e)),x)
```

```
[Out] 1/f*a^3*c*ln(sec(f*x+e)+tan(f*x+e))+a^3*c*x+1/f*a^3*c*e-a^3*c*sec(f*x+e)*ta
n(f*x+e)/f-2/3*a^3*c*tan(f*x+e)/f-1/3/f*a^3*c*tan(f*x+e)*sec(f*x+e)^2
```

maxima [A] time = 0.31, size = 107, normalized size = 1.39

$$-\frac{2\left(\tan\left(fx+e\right)^3+3\tan\left(fx+e\right)\right)a^3c-6\left(fx+e\right)a^3c-3a^3c\left(\frac{2\sin\left(fx+e\right)}{\sin\left(fx+e\right)^2-1}-\log\left(\sin\left(fx+e\right)+1\right)+\log\left(\sin\left(f\right.\right.\right.}{6f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -1/6*(2*(tan(f*x + e)^3 + 3*tan(f*x + e))*a^3*c - 6*(f*x + e)*a^3*c - 3*a^3
*c*(2*sin(f*x + e)/(sin(f*x + e)^2 - 1) - log(sin(f*x + e) + 1) + log(sin(f
*x + e) - 1)) - 12*a^3*c*log(sec(f*x + e) + tan(f*x + e)))/f
```

mupad [B] time = 1.55, size = 104, normalized size = 1.35

$$\frac{4\,a^3\,c\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)-\frac{4\,a^3\,c\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{3}}{f\,\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6-3\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4+3\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2-1\right)}+a^3\,c\,x+\frac{2\,a^3\,c\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x)),x)
```

```
[Out] (4*a^3*c*tan(e/2 + (f*x)/2) - (4*a^3*c*tan(e/2 + (f*x)/2)^3)/3)/(f*(3*tan(e
/2 + (f*x)/2)^2 - 3*tan(e/2 + (f*x)/2)^4 + tan(e/2 + (f*x)/2)^6 - 1)) + a^3
*c*x + (2*a^3*c*atanh(tan(e/2 + (f*x)/2)))/f
```

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

$$-a^3c\left(\int(-1)\,dx+\int\left(-2\sec\left(e+fx\right)\right)\,dx+\int 2\sec^3\left(e+fx\right)dx+\int\sec^4\left(e+fx\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3*(c-c*sec(f*x+e)),x)
```

```
[Out] -a**3*c*(Integral(-1, x) + Integral(-2*sec(e + f*x), x) + Integral(2*sec(e
+ f*x)**3, x) + Integral(sec(e + f*x)**4, x))
```

3.16 $\int \frac{(a+a\sec(e+fx))^3}{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=78

$$-\frac{a^3\tan(e+fx)}{cf}+\frac{8a^3\cot(e+fx)}{cf}+\frac{8a^3\csc(e+fx)}{cf}-\frac{4a^3\tanh^{-1}(\sin(e+fx))}{cf}+\frac{a^3x}{c}$$

```
[Out] a^3*x/c-4*a^3*arctanh(sin(f*x+e))/c/f+8*a^3*cot(f*x+e)/c/f+8*a^3*csc(f*x+e)
/c/f-a^3*tan(f*x+e)/c/f
```

Rubi [A] time = 0.21, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {3904, 3886, 3473, 8, 2606, 3767, 2621, 321, 207, 2620, 14}

$$-\frac{a^3\tan(e+fx)}{cf}+\frac{8a^3\cot(e+fx)}{cf}+\frac{8a^3\csc(e+fx)}{cf}-\frac{4a^3\tanh^{-1}(\sin(e+fx))}{cf}+\frac{a^3x}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x]),x]
```

```
[Out] (a^3*x)/c - (4*a^3*ArcTanh[Sin[e + f*x]])/(c*f) + (8*a^3*Cot[e + f*x])/(c*f
) + (8*a^3*Csc[e + f*x])/(c*f) - (a^3*Tan[e + f*x])/(c*f)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, 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 207

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

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
```

```
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

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 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^3}{c-c\sec(e+fx)}\,dx = -\frac{\int \cot^2(e+fx)(a+a\sec(e+fx))^4\,dx}{ac}$$

$$= -\frac{\int \left(a^4\cot^2(e+fx)+4a^4\cot(e+fx)\csc(e+fx)+6a^4\csc^2(e+fx)+4a^4\csc^2(e+ \right.}{ac}$$

$$= -\frac{a^3\int \cot^2(e+fx)\,dx}{c} - \frac{a^3\int \csc^2(e+fx)\sec^2(e+fx)\,dx}{c} - \frac{\left(4a^3\right)\int \cot(e+fx)\csc}{c}$$

$$= \frac{a^3\cot(e+fx)}{cf} + \frac{a^3\int 1\,dx}{c} - \frac{a^3\,\mathrm{Subst}\left(\int \frac{1+x^2}{x^2}\,dx, x, \tan(e+fx)\right)}{cf} + \frac{\left(4a^3\right)\mathrm{Subst}(\int 1}{}$$

$$= \frac{a^3x}{c} + \frac{7a^3\cot(e+fx)}{cf} + \frac{8a^3\csc(e+fx)}{cf} - \frac{a^3\,\mathrm{Subst}\left(\int \left(1+\frac{1}{x^2}\right)dx, x, \tan(e+fx)\right)}{cf}$$

$$= \frac{a^3x}{c} - \frac{4a^3\tanh^{-1}(\sin(e+fx))}{cf} + \frac{8a^3\cot(e+fx)}{cf} + \frac{8a^3\csc(e+fx)}{cf} - \frac{a^3\tan(e+fx}{cf}$$

Mathematica [B] time = 2.58, size = 240, normalized size = 3.08

$$\frac{a^3\cos^2(e+fx)\tan\left(\frac{1}{2}(e+fx)\right)\sec^4\left(\frac{1}{2}(e+fx)\right)(\sec(e+fx)+1)^3\left(8\csc\left(\frac{e}{2}\right)\sin\left(\frac{fx}{2}\right)\sec\left(\frac{1}{2}(e+fx)\right)+\tan\left(\frac{1}{2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x]),x]
```

```
[Out] (a^3*Cos[e + f*x]^2*Sec[(e + f*x)/2]^4*(1 + Sec[e + f*x])^3*Tan[(e + f*x)/2
]*(8*Csc[e/2]*Sec[(e + f*x)/2]*Sin[(f*x)/2] + (-(f*x) - 4*Log[Cos[(e + f*x)
/2] - Sin[(e + f*x)/2]] + 4*Log[Cos[(e + f*x)/2] + Sin[(e + f*x)/2]] + Sin[
f*x]/((Cos[e/2] - Sin[e/2])*(Cos[e/2] + Sin[e/2])*(Cos[(e + f*x)/2] - Sin[(
e + f*x)/2])*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2])))*Tan[(e + f*x)/2]))/(4*
f*(c - c*Sec[e + f*x]))
```

fricas [A] time = 0.51, size = 125, normalized size = 1.60

$$\frac{a^3fx\cos\left(fx+e\right)\sin\left(fx+e\right)-2\,a^3\cos\left(fx+e\right)\log\left(\sin\left(fx+e\right)+1\right)\sin\left(fx+e\right)+2\,a^3\cos\left(fx+e\right)\log\left(-\right.}{cf\cos\left(fx+e\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] (a^3*f*x*cos(f*x + e)*sin(f*x + e) - 2*a^3*cos(f*x + e)*log(sin(f*x + e) +
1)*sin(f*x + e) + 2*a^3*cos(f*x + e)*log(-sin(f*x + e) + 1)*sin(f*x + e) +
9*a^3*cos(f*x + e)^2 + 8*a^3*cos(f*x + e) - a^3)/(c*f*cos(f*x + e)*sin(f*x
+ e))
```

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((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*(-2*a^3/c*1/2*(f*x+exp(1))/2-2*a^3/c*ln(abs(tan((f*x+exp(1))/2
)-1))+2*a^3/c*ln(abs(tan((f*x+exp(1))/2)+1))+(-5*tan((f*x+exp(1))/2)^2*a^3+
4*a^3)/c/(tan((f*x+exp(1))/2)^3-tan((f*x+exp(1))/2)))
```

maple [A] time = 0.70, size = 137, normalized size = 1.76

$$\frac{8a^3}{fc\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{a^3}{fc\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}+\frac{4a^3\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}{fc}+\frac{a^3}{fc\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+1\right)}-\frac{4a^3\ln\left(\tan\left(\frac{e}{2}+\right.\right.}{fc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x)
```

```
[Out] 8/f*a^3/c/tan(1/2*e+1/2*f*x)+1/f*a^3/c/(tan(1/2*e+1/2*f*x)-1)+4/f*a^3/c*ln(
tan(1/2*e+1/2*f*x)-1)+1/f*a^3/c/(tan(1/2*e+1/2*f*x)+1)-4/f*a^3/c*ln(tan(1/2
*e+1/2*f*x)+1)+2/f*a^3/c*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.43, size = 274, normalized size = 3.51

$$-\frac{a^3\left(\frac{\frac{3\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-1}{\frac{c\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{c\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}}+\frac{\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}+1\right)}{c}-\frac{\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-1\right)}{c}\right)-a^3\left(\frac{2\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c}+\frac{\cos\left(fx+e\right)+1}{c\sin\left(fx+e\right)}\right)+3\,a^3\left(\log\left(\cdots\right.\right.}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -(a^3*((3*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 - 1)/(c*sin(f*x + e)/(cos(f*x
 + e) + 1) - c*sin(f*x + e)^3/(cos(f*x + e) + 1)^3) + log(sin(f*x + e)/(cos
(f*x + e) + 1) + 1)/c - log(sin(f*x + e)/(cos(f*x + e) + 1) - 1)/c) - a^3*(
2*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c + (cos(f*x + e) + 1)/(c*sin(f*x
 + e))) + 3*a^3*(log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/c - log(sin(f*x +
 e)/(cos(f*x + e) + 1) - 1)/c - (cos(f*x + e) + 1)/(c*sin(f*x + e))) - 3*a^
3*(cos(f*x + e) + 1)/(c*sin(f*x + e)))/f
```

mupad [B] time = 1.48, size = 85, normalized size = 1.09

$$\frac{a^3\,x}{c}-\frac{10\,a^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2-8\,a^3}{f\,\left(c\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)-c\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3\right)}-\frac{8\,a^3\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)}{c\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3/(c - c/cos(e + f*x)),x)
```

```
[Out] (a^3*x)/c - (10*a^3*tan(e/2 + (f*x)/2)^2 - 8*a^3)/(f*(c*tan(e/2 + (f*x)/2)
- c*tan(e/2 + (f*x)/2)^3)) - (8*a^3*atanh(tan(e/2 + (f*x)/2)))/(c*f)
```

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

$$-\frac{a^3\left(\int\frac{3\sec\left(e+fx\right)}{\sec\left(e+fx\right)-1}\,dx+\int\frac{3\sec^2\left(e+fx\right)}{\sec\left(e+fx\right)-1}\,dx+\int\frac{\sec^3\left(e+fx\right)}{\sec\left(e+fx\right)-1}\,dx+\int\frac{1}{\sec\left(e+fx\right)-1}\,dx\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3/(c-c*sec(f*x+e)),x)
```

```
[Out] -a**3*(Integral(3*sec(e + f*x)/(sec(e + f*x) - 1), x) + Integral(3*sec(e +
f*x)**2/(sec(e + f*x) - 1), x) + Integral(sec(e + f*x)**3/(sec(e + f*x) - 1
), x) + Integral(1/(sec(e + f*x) - 1), x))/c
```

3.17 $\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=88

$$\frac{a^3\tanh^{-1}(\sin(e+fx))}{c^2f}+\frac{4a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))}-\frac{8a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}+\frac{a^3x}{c^2}$$

```
[Out] a^3*x/c^2+a^3*arctanh(sin(f*x+e))/c^2/f-8/3*a^3*tan(f*x+e)/c^2/f/(1-sec(f*x
+e))^2+4/3*a^3*tan(f*x+e)/c^2/f/(1-sec(f*x+e))
```

Rubi [A] time = 0.36, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3903, 3777, 3919, 3794, 3796, 3797, 3799, 3998, 3770}

$$\frac{a^3\tanh^{-1}(\sin(e+fx))}{c^2f}+\frac{4a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))}-\frac{8a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}+\frac{a^3x}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (a^3*x)/c^2 + (a^3*ArcTanh[Sin[e + f*x]])/(c^2*f) - (8*a^3*Tan[e + f*x])/(3
*c^2*f*(1 - Sec[e + f*x])^2) + (4*a^3*Tan[e + f*x])/(3*c^2*f*(1 - Sec[e + f
*x]))
```

Rule 3770

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

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3799

```
Int[csc[(e_.) + (f_.)*(x_)]^3*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)),
x] - Dist[1/(a^2*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*
(a*m - b*(2*m + 1)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a
^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3998

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/(csc[(
e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbol] :> Dist[B/b, Int[Csc[e + f*x],
x], x] + Dist[(A*b - a*B)/b, Int[Csc[e + f*x]/(a + b*Csc[e + f*x]), x], x]
/; FreeQ[{a, b, e, f, A, B}, x] && NeQ[A*b - a*B, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^2}\,dx &= \frac{\int \left(\frac{a^3}{(1-\sec(e+fx))^2}+\frac{3a^3\sec(e+fx)}{(1-\sec(e+fx))^2}+\frac{3a^3\sec^2(e+fx)}{(1-\sec(e+fx))^2}+\frac{a^3\sec^3(e+fx)}{(1-\sec(e+fx))^2}\right)dx}{c^2}\\
&= \frac{a^3\int \frac{1}{(1-\sec(e+fx))^2}\,dx}{c^2}+\frac{a^3\int \frac{\sec^3(e+fx)}{(1-\sec(e+fx))^2}\,dx}{c^2}+\frac{\left(3a^3\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{c^2}+\frac{\left(3a^3\right)\int \frac{\mathrm{se}}{(1-}}{c}\\
&= -\frac{8a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}-\frac{a^3\int \frac{-3-\sec(e+fx)}{1-\sec(e+fx)}\,dx}{3c^2}+\frac{a^3\int \frac{(-2-3\sec(e+fx))\sec(e+fx)}{1-\sec(e+fx)}\,dx}{3c^2}+\frac{a^3}{}\\
&= \frac{a^3x}{c^2}-\frac{8a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}+\frac{a^3\tan(e+fx)}{c^2f(1-\sec(e+fx))}+\frac{a^3\int \sec(e+fx)\,dx}{c^2}+\frac{\left(4a^3\right)}{}\\
&= \frac{a^3x}{c^2}+\frac{a^3\tanh^{-1}(\sin(e+fx))}{c^2f}-\frac{8a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))^2}+\frac{4a^3\tan(e+fx)}{3c^2f(1-\sec(e+fx))}
\end{aligned}$$

Mathematica [B] time = 1.18, size = 177, normalized size = 2.01

$$\frac{a^3(\cos(e+fx)+1)^3\tan\left(\frac{1}{2}(e+fx)\right)\sec^2\left(\frac{1}{2}(e+fx)\right)\left(-4\cot\left(\frac{e}{2}\right)\tan\left(\frac{1}{2}(e+fx)\right)\sec^2\left(\frac{1}{2}(e+fx)\right)+4\csc\left(\frac{e}{2}\right)\sin}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (a^3*(1 + Cos[e + f*x])^3*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2]*(4*Csc[e/2]*S
ec[(e + f*x)/2]*Sin[(f*x)/2] - 4*Cot[e/2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/
2] + 3*(f*x - Log[Cos[(e + f*x)/2] - Sin[(e + f*x)/2]] + Log[Cos[(e + f*x)/
2] + Sin[(e + f*x)/2]])*Tan[(e + f*x)/2]^3))/(6*c^2*f*(-1 + Cos[e + f*x])^2
)
```

fricas [A] time = 0.45, size = 156, normalized size = 1.77

$$\frac{8\,a^3\cos\left(fx+e\right)^2+16\,a^3\cos\left(fx+e\right)+8\,a^3+3\left(a^3\cos\left(fx+e\right)-a^3\right)\log\left(\sin\left(fx+e\right)+1\right)\sin\left(fx+e\right)-3}{6\left(c^2f\cos\left(fx+e\right)-c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/6*(8*a^3*cos(f*x + e)^2 + 16*a^3*cos(f*x + e) + 8*a^3 + 3*(a^3*cos(f*x +
e) - a^3)*log(sin(f*x + e) + 1)*sin(f*x + e) - 3*(a^3*cos(f*x + e) - a^3)*l
og(-sin(f*x + e) + 1)*sin(f*x + e) + 6*(a^3*f*x*cos(f*x + e) - a^3*f*x)*sin
(f*x + e))/((c^2*f*cos(f*x + e) - c^2*f)*sin(f*x + e))
```

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((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)2/f*(-a^3*1/2/c^2*ln(abs(tan((f*x+exp(1))/2)-1))+a^3*1/2/c^2*ln(abs
(tan((f*x+exp(1))/2)+1))+2*a^3*1/2/c^2*(f*x+exp(1))/2-2*a^3*1/3/c^2/tan((f*
x+exp(1))/2)^3)
```

maple [A] time = 0.83, size = 90, normalized size = 1.02

$$-\frac{4a^3}{3f\,c^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}-\frac{a^3\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}{f\,c^2}+\frac{a^3\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+1\right)}{f\,c^2}+\frac{2a^3\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x)
```

```
[Out] -4/3/f*a^3/c^2/tan(1/2*e+1/2*f*x)^3-1/f*a^3/c^2*ln(tan(1/2*e+1/2*f*x)-1)+1/
f*a^3/c^2*ln(tan(1/2*e+1/2*f*x)+1)+2/f*a^3/c^2*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 274, normalized size = 3.11

$$\frac{a^3\left(\frac{12\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^2}+\frac{\left(\frac{9\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-1\right)\left(\cos\left(fx+e\right)+1\right)^3}{c^2\sin\left(fx+e\right)^3}\right)+a^3\left(\frac{6\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}+1\right)}{c^2}-\frac{6\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-1\right)}{c^2}-\frac{\left(\frac{9\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}\right.}{c^2\sin}\right.}{6f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/6*(a^3*(12*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^2 + (9*sin(f*x + e)^
2/(cos(f*x + e) + 1)^2 - 1)*(cos(f*x + e) + 1)^3/(c^2*sin(f*x + e)^3)) + a^
```

```
3*(6*log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/c^2 - 6*log(sin(f*x + e)/(cos
(f*x + e) + 1) - 1)/c^2 - (9*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)*(cos(
f*x + e) + 1)^3/(c^2*sin(f*x + e)^3)) - 3*a^3*(3*sin(f*x + e)^2/(cos(f*x +
e) + 1)^2 + 1)*(cos(f*x + e) + 1)^3/(c^2*sin(f*x + e)^3) + 3*a^3*(3*sin(f*x
 + e)^2/(cos(f*x + e) + 1)^2 - 1)*(cos(f*x + e) + 1)^3/(c^2*sin(f*x + e)^3)
)/f
```

mupad [B] time = 1.44, size = 45, normalized size = 0.51

$$\frac{a^3\,x}{c^2}+\frac{a^3\,\left(2\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)-\frac{4\,{\cot\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^3}{3}\right)}{c^2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3/(c - c/cos(e + f*x))^2,x)
```

```
[Out] (a^3*x)/c^2 + (a^3*(2*atanh(tan(e/2 + (f*x)/2)) - (4*cot(e/2 + (f*x)/2)^3)/
3))/(c^2*f)
```

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

$$\frac{a^3\left(\int\frac{3\sec\left(e+fx\right)}{\sec^2\left(e+fx\right)-2\sec\left(e+fx\right)+1}\,dx+\int\frac{3\sec^2\left(e+fx\right)}{\sec^2\left(e+fx\right)-2\sec\left(e+fx\right)+1}\,dx+\int\frac{\sec^3\left(e+fx\right)}{\sec^2\left(e+fx\right)-2\sec\left(e+fx\right)+1}\,dx+\int\frac{1}{\sec^2\left(e+fx\right)-2\sec\left(e+\right.}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**2,x)
```

```
[Out] a**3*(Integral(3*sec(e + f*x)/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x) +
Integral(3*sec(e + f*x)**2/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x) + Int
egral(sec(e + f*x)**3/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x) + Integral
(1/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x))/c**2
```

3.18 $\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=102

$$-\frac{26a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))}+\frac{4a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{8a^3\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}+\frac{a^3x}{c^3}$$

```
[Out] a^3*x/c^3-8/5*a^3*tan(f*x+e)/c^3/f/(1-sec(f*x+e))^3+4/15*a^3*tan(f*x+e)/c^3
/f/(1-sec(f*x+e))^2-26/15*a^3*tan(f*x+e)/c^3/f/(1-sec(f*x+e))
```

Rubi [A] time = 0.45, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797, 3799, 4000}

$$-\frac{26a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))}+\frac{4a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{8a^3\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}+\frac{a^3x}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (a^3*x)/c^3 - (8*a^3*Tan[e + f*x])/(5*c^3*f*(1 - Sec[e + f*x])^3) + (4*a^3*
Tan[e + f*x])/(15*c^3*f*(1 - Sec[e + f*x])^2) - (26*a^3*Tan[e + f*x])/(15*c
^3*f*(1 - Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3799

```
Int[csc[(e_.) + (f_.)*(x_)]^3*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)),
x] - Dist[1/(a^2*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*
(a*m - b*(2*m + 1)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a
```

```
^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 4000

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(cs
c[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> Simp[((A*b - a*B)*Cot[e +
 f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x] + Dist[(a*B*m + A*b*(m +
1))/(a*b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x], x]
/; FreeQ[{a, b, A, B, e, f}, x] && NeQ[A*b - a*B, 0] && EqQ[a^2 - b^2, 0] &
& NeQ[a*B*m + A*b*(m + 1), 0] && LtQ[m, -2^(-1)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^3}\,dx &= \frac{\int \left(\frac{a^3}{(1-\sec(e+fx))^3}+\frac{3a^3\sec(e+fx)}{(1-\sec(e+fx))^3}+\frac{3a^3\sec^2(e+fx)}{(1-\sec(e+fx))^3}+\frac{a^3\sec^3(e+fx)}{(1-\sec(e+fx))^3}\right)dx}{c^3}\\
&= \frac{a^3\int \frac{1}{(1-\sec(e+fx))^3}\,dx}{c^3}+\frac{a^3\int \frac{\sec^3(e+fx)}{(1-\sec(e+fx))^3}\,dx}{c^3}+\frac{\left(3a^3\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{c^3}+\\
&= -\frac{8a^3\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}-\frac{a^3\int \frac{-5-2\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{5c^3}+\frac{a^3\int \frac{(-3-5\sec(e+fx))\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{5c^3}+\\
&= -\frac{8a^3\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}+\frac{4a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}+\frac{a^3\int \frac{15+7\sec(e+fx)}{1-\sec(e+fx)}\,dx}{15c^3}+\\
&= \frac{a^3x}{c^3}-\frac{8a^3\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}+\frac{4a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{4a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))}+\\
&= \frac{a^3x}{c^3}-\frac{8a^3\tan(e+fx)}{5c^3f(1-\sec(e+fx))^3}+\frac{4a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))^2}-\frac{26a^3\tan(e+fx)}{15c^3f(1-\sec(e+fx))}
\end{aligned}
$$

Mathematica [C] time = 0.10, size = 53, normalized size = 0.52

$$\frac{2a^3\cot^5\left(\frac{e}{2}+\frac{fx}{2}\right)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{5c^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^3*Cot[e/2 + (f*x)/2]^5*Hypergeometric2F1[-5/2, 1, -3/2, -Tan[e/2 + (f*
x)/2]^2])/(5*c^3*f)
```

fricas [A] time = 0.43, size = 128, normalized size = 1.25

$$\frac{46\,a^3\cos\left(fx+e\right)^3-2\,a^3\cos\left(fx+e\right)^2-22\,a^3\cos\left(fx+e\right)+26\,a^3+15\left(a^3fx\cos\left(fx+e\right)^2-2\,a^3fx\cos\left(fx\right.\right.}{15\left(c^3f\cos\left(fx+e\right)^2-2\,c^3f\cos\left(fx+e\right)+c^3f\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(46*a^3*cos(f*x + e)^3 - 2*a^3*cos(f*x + e)^2 - 22*a^3*cos(f*x + e) +
26*a^3 + 15*(a^3*f*x*cos(f*x + e)^2 - 2*a^3*f*x*cos(f*x + e) + a^3*f*x)*sin
(f*x + e))/((c^3*f*cos(f*x + e)^2 - 2*c^3*f*cos(f*x + e) + c^3*f)*sin(f*x +
 e))
```

giac [A] time = 0.40, size = 77, normalized size = 0.75

$$\frac{\frac{15\left(fx+e\right)a^3}{c^3}+\frac{2\left(15\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-5\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^2+3\,a^3\right)}{c^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5}}{15\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] 1/15*(15*(f*x + e)*a^3/c^3 + 2*(15*a^3*tan(1/2*f*x + 1/2*e)^4 - 5*a^3*tan(1
/2*f*x + 1/2*e)^2 + 3*a^3)/(c^3*tan(1/2*f*x + 1/2*e)^5))/f
```

maple [A] time = 0.82, size = 89, normalized size = 0.87

$$-\frac{2a^3}{3f\,c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{2a^3}{5f\,c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}+\frac{2a^3}{f\,c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^3\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x)
```

```
[Out] -2/3/f*a^3/c^3/tan(1/2*e+1/2*f*x)^3+2/5/f*a^3/c^3/tan(1/2*e+1/2*f*x)^5+2/f*
a^3/c^3/tan(1/2*e+1/2*f*x)+2/f*a^3/c^3*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 282, normalized size = 2.76

$$\frac{a^3\left(\frac{120\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^3}-\frac{\left(\frac{20\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\frac{105\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}-3\right)\left(\cos\left(fx+e\right)+1\right)^5}{c^3\sin\left(fx+e\right)^5}\right)+\frac{a^3\left(\frac{10\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}+\frac{15\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}+3\right)\left(\cos\left(fx+e\right)+1\right)^5}{c^3\sin\left(fx+e\right)^5}}{60\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] 1/60*(a^3*(120*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^3 - (20*sin(f*x +
e)^2/(cos(f*x + e) + 1)^2 - 105*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 - 3)*(c
os(f*x + e) + 1)^5/(c^3*sin(f*x + e)^5)) + a^3*(10*sin(f*x + e)^2/(cos(f*x
+ e) + 1)^2 + 15*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 3)*(cos(f*x + e) + 1
)^5/(c^3*sin(f*x + e)^5) - 3*a^3*(10*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 -
15*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 - 3)*(cos(f*x + e) + 1)^5/(c^3*sin(f
*x + e)^5) - 9*a^3*(5*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 - 1)*(cos(f*x + e
) + 1)^5/(c^3*sin(f*x + e)^5))/f
```

mupad [B] time = 1.38, size = 96, normalized size = 0.94

$$\frac{a^3\,x}{c^3}+\frac{\frac{2\,a^3\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{5}-\frac{2\,a^3\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{3}+2\,a^3\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4}{c^3\,f\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3/(c - c/cos(e + f*x))^3,x)
```

```
[Out] (a^3*x)/c^3 + ((2*a^3*cos(e/2 + (f*x)/2)^5)/5 + 2*a^3*cos(e/2 + (f*x)/2)*si
n(e/2 + (f*x)/2)^4 - (2*a^3*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)^2)/3)/(
c^3*f*sin(e/2 + (f*x)/2)^5)
```

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

$$-\frac{a^3\left(\int\frac{3\sec\left(e+fx\right)}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx+\int\frac{3\sec^2\left(e+fx\right)}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx+\int\frac{\sec^3\left(e+fx\right)}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx+\int\frac{1}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**3,x)
```

```
[Out] -a**3*(Integral(3*sec(e + f*x)/(sec(e + f*x)**3 - 3*sec(e + f*x)**2 + 3*sec
(e + f*x) - 1), x) + Integral(3*sec(e + f*x)**2/(sec(e + f*x)**3 - 3*sec(e
+ f*x)**2 + 3*sec(e + f*x) - 1), x) + Integral(sec(e + f*x)**3/(sec(e + f*x
)**3 - 3*sec(e + f*x)**2 + 3*sec(e + f*x) - 1), x) + Integral(1/(sec(e + f*
x)**3 - 3*sec(e + f*x)**2 + 3*sec(e + f*x) - 1), x))/c**3
```

3.19 $\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^4}\,dx$

Optimal. Leaf size=133

$$-\frac{167a^3\tan(e+fx)}{105c^4f(1-\sec(e+fx))}-\frac{62a^3\tan(e+fx)}{105c^4f(1-\sec(e+fx))^2}+\frac{4a^3\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}-\frac{8a^3\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}+\frac{a^3x}{c^4}$$

```
[Out] a^3*x/c^4-8/7*a^3*tan(f*x+e)/c^4/f/(1-sec(f*x+e))^4+4/35*a^3*tan(f*x+e)/c^4
/f/(1-sec(f*x+e))^3-62/105*a^3*tan(f*x+e)/c^4/f/(1-sec(f*x+e))^2-167/105*a^
3*tan(f*x+e)/c^4/f/(1-sec(f*x+e))
```

Rubi [A] time = 0.58, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797, 3799, 4000}

$$-\frac{167a^3\tan(e+fx)}{105c^4f(1-\sec(e+fx))}-\frac{62a^3\tan(e+fx)}{105c^4f(1-\sec(e+fx))^2}+\frac{4a^3\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3}-\frac{8a^3\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4}+\frac{a^3x}{c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (a^3*x)/c^4 - (8*a^3*Tan[e + f*x])/(7*c^4*f*(1 - Sec[e + f*x])^4) + (4*a^3*
Tan[e + f*x])/(35*c^4*f*(1 - Sec[e + f*x])^3) - (62*a^3*Tan[e + f*x])/(105*
c^4*f*(1 - Sec[e + f*x])^2) - (167*a^3*Tan[e + f*x])/(105*c^4*f*(1 - Sec[e
+ f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3799

```
Int[csc[(e_.) + (f_.)*(x_)]^3*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)),
```

```
x] - Dist[1/(a^2*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*
(a*m - b*(2*m + 1)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a
^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 4000

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(cs
c[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> Simp[((A*b - a*B)*Cot[e +
 f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x] + Dist[(a*B*m + A*b*(m +
1))/(a*b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x], x]
/; FreeQ[{a, b, A, B, e, f}, x] && NeQ[A*b - a*B, 0] && EqQ[a^2 - b^2, 0] &
& NeQ[a*B*m + A*b*(m + 1), 0] && LtQ[m, -2^(-1)]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^4}\,dx = \frac{\int \left(\frac{a^3}{(1-\sec(e+fx))^4}+\frac{3a^3\sec(e+fx)}{(1-\sec(e+fx))^4}+\frac{3a^3\sec^2(e+fx)}{(1-\sec(e+fx))^4}+\frac{a^3\sec^3(e+fx)}{(1-\sec(e+fx))^4}\right)dx}{c^4}$$

$$= \frac{a^3\int \frac{1}{(1-\sec(e+fx))^4}\,dx}{c^4} + \frac{a^3\int \frac{\sec^3(e+fx)}{(1-\sec(e+fx))^4}\,dx}{c^4} + \frac{(3a^3)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^4}\,dx}{c^4} + \frac{(3a^3)\int}{}$$

$$= -\frac{8a^3\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4} - \frac{a^3\int \frac{-7-3\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{7c^4} + \frac{a^3\int \frac{(-4-7\sec(e+fx))\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{7c^4}$$

$$= -\frac{8a^3\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4} + \frac{4a^3\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3} + \frac{a^3\int \frac{35+20\sec(e+fx)}{(1-\sec(e+fx))^2}\,dx}{35c^4} + \frac{(1}{}$$

$$= -\frac{8a^3\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4} + \frac{4a^3\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3} - \frac{62a^3\tan(e+fx)}{105c^4f(1-\sec(e+fx))^2}$$

$$= \frac{a^3x}{c^4} - \frac{8a^3\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4} + \frac{4a^3\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3} - \frac{62a^3\tan(e+fx)}{105c^4f(1-\sec(e+f}$$

$$= \frac{a^3x}{c^4} - \frac{8a^3\tan(e+fx)}{7c^4f(1-\sec(e+fx))^4} + \frac{4a^3\tan(e+fx)}{35c^4f(1-\sec(e+fx))^3} - \frac{62a^3\tan(e+fx)}{105c^4f(1-\sec(e+f}$$

Mathematica [A] time = 0.60, size = 227, normalized size = 1.71

$$a^3\csc\left(\frac{e}{2}\right)\csc^7\left(\frac{1}{2}(e+fx)\right)\left(-11270\sin\left(e+\frac{fx}{2}\right)+9114\sin\left(e+\frac{3fx}{2}\right)+5040\sin\left(2e+\frac{3fx}{2}\right)-3248\sin\left(2e+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (a^3*Csc[e/2]*Csc[(e + f*x)/2]^7*(3675*f*x*Cos[(f*x)/2] - 3675*f*x*Cos[e +
(f*x)/2] - 2205*f*x*Cos[e + (3*f*x)/2] + 2205*f*x*Cos[2*e + (3*f*x)/2] + 73
5*f*x*Cos[2*e + (5*f*x)/2] - 735*f*x*Cos[3*e + (5*f*x)/2] - 105*f*x*Cos[3*e
 + (7*f*x)/2] + 105*f*x*Cos[4*e + (7*f*x)/2] - 12320*Sin[(f*x)/2] - 11270*S
in[e + (f*x)/2] + 9114*Sin[e + (3*f*x)/2] + 5040*Sin[2*e + (3*f*x)/2] - 324
8*Sin[2*e + (5*f*x)/2] - 1470*Sin[3*e + (5*f*x)/2] + 674*Sin[3*e + (7*f*x)/
2]))/(13440*c^4*f)
```

fricas [A] time = 0.45, size = 172, normalized size = 1.29

$$\frac{337\,a^3\cos\left(fx+e\right)^4-276\,a^3\cos\left(fx+e\right)^3-50\,a^3\cos\left(fx+e\right)^2+396\,a^3\cos\left(fx+e\right)-167\,a^3+105\left(a^3fx\,c\right.}{105\left(c^4f\cos\left(fx+e\right)^3-3\,c^4f\cos\left(fx+e\right)^2+3\,c^4f\cos\left(\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] 1/105*(337*a^3*cos(f*x + e)^4 - 276*a^3*cos(f*x + e)^3 - 50*a^3*cos(f*x + e
)^2 + 396*a^3*cos(f*x + e) - 167*a^3 + 105*(a^3*f*x*cos(f*x + e)^3 - 3*a^3*
f*x*cos(f*x + e)^2 + 3*a^3*f*x*cos(f*x + e) - a^3*f*x)*sin(f*x + e))/((c^4*
f*cos(f*x + e)^3 - 3*c^4*f*cos(f*x + e)^2 + 3*c^4*f*cos(f*x + e) - c^4*f)*s
in(f*x + e))
```

giac [A] time = 0.59, size = 93, normalized size = 0.70

$$\frac{\frac{105\,(fx+e)a^3}{c^4} + \frac{210\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6 - 70\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4 + 42\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^2 - 15\,a^3}{c^4\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^7}}{105\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] 1/105*(105*(f*x + e)*a^3/c^4 + (210*a^3*tan(1/2*f*x + 1/2*e)^6 - 70*a^3*tan
(1/2*f*x + 1/2*e)^4 + 42*a^3*tan(1/2*f*x + 1/2*e)^2 - 15*a^3)/(c^4*tan(1/2*
f*x + 1/2*e)^7))/f
```

maple [A] time = 0.88, size = 111, normalized size = 0.83

$$-\frac{a^3}{7f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^7}+\frac{2a^3}{5f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}-\frac{2a^3}{3f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{2a^3}{f\,c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^3\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x)
```

```
[Out] -1/7/f*a^3/c^4/tan(1/2*e+1/2*f*x)^7+2/5/f*a^3/c^4/tan(1/2*e+1/2*f*x)^5-2/3/
f*a^3/c^4/tan(1/2*e+1/2*f*x)^3+2/f*a^3/c^4/tan(1/2*e+1/2*f*x)+2/f*a^3/c^4*a
rctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.45, size = 383, normalized size = 2.88

$$5\,a^3\left(\frac{336\,\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^4}+\frac{\left(\frac{21\,\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\frac{77\,\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}+\frac{315\,\sin\left(fx+e\right)^6}{\left(\cos\left(fx+e\right)+1\right)^6}-3\right)\left(\cos\left(fx+e\right)+1\right)^7}{c^4\sin\left(fx+e\right)^7}\right)+\frac{3\,a^3\left(\frac{21\,\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}+\frac{35\,\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}-\frac{105}{(\cos}\right.}{c^4\sin\left(fx+e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] 1/840*(5*a^3*(336*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^4 + (21*sin(f*x
 + e)^2/(cos(f*x + e) + 1)^2 - 77*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 315
*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 3)*(cos(f*x + e) + 1)^7/(c^4*sin(f*x
 + e)^7)) + 3*a^3*(21*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 35*sin(f*x + e)
^4/(cos(f*x + e) + 1)^4 - 105*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 15)*(co
s(f*x + e) + 1)^7/(c^4*sin(f*x + e)^7) + 9*a^3*(21*sin(f*x + e)^2/(cos(f*x
+ e) + 1)^2 - 35*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 35*sin(f*x + e)^6/(c
os(f*x + e) + 1)^6 - 5)*(cos(f*x + e) + 1)^7/(c^4*sin(f*x + e)^7) - a^3*(21
*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 - 35*sin(f*x + e)^4/(cos(f*x + e) + 1)
^4 - 105*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 + 15)*(cos(f*x + e) + 1)^7/(c^
4*sin(f*x + e)^7))/f
```

mupad [B] time = 1.44, size = 122, normalized size = 0.92

$$\frac{a^3\left(-\frac{\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^7}{7}+\frac{2\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^5\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^2}{5}-\frac{2\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^3\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^4}{3}+2\,\cos\left(\frac{e}{2}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^6+\left(e+f\,x\right)\sin\left(\right.\right.}{c^4\,f\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3/(c - c/cos(e + f*x))^4,x)
```

```
[Out] (a^3*(2*cos(e/2 + (f*x)/2)*sin(e/2 + (f*x)/2)^6 - cos(e/2 + (f*x)/2)^7/7 +
sin(e/2 + (f*x)/2)^7*(e + f*x) - (2*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)
^4)/3 + (2*cos(e/2 + (f*x)/2)^5*sin(e/2 + (f*x)/2)^2)/5))/(c^4*f*sin(e/2 +
(f*x)/2)^7)
```

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

$$\frac{a^3\left(\int \frac{3\sec\left(e+fx\right)}{\sec^4\left(e+fx\right)-4\sec^3\left(e+fx\right)+6\sec^2\left(e+fx\right)-4\sec\left(e+fx\right)+1}\,dx+\int \frac{3\sec^2\left(e+fx\right)}{\sec^4\left(e+fx\right)-4\sec^3\left(e+fx\right)+6\sec^2\left(e+fx\right)-4\sec\left(e+fx\right)+1}\,dx+\int\right.}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**4,x)
```

```
[Out] a**3*(Integral(3*sec(e + f*x)/(sec(e + f*x)**4 - 4*sec(e + f*x)**3 + 6*sec(
e + f*x)**2 - 4*sec(e + f*x) + 1), x) + Integral(3*sec(e + f*x)**2/(sec(e +
 f*x)**4 - 4*sec(e + f*x)**3 + 6*sec(e + f*x)**2 - 4*sec(e + f*x) + 1), x)
+ Integral(sec(e + f*x)**3/(sec(e + f*x)**4 - 4*sec(e + f*x)**3 + 6*sec(e +
 f*x)**2 - 4*sec(e + f*x) + 1), x) + Integral(1/(sec(e + f*x)**4 - 4*sec(e
+ f*x)**3 + 6*sec(e + f*x)**2 - 4*sec(e + f*x) + 1), x))/c**4
```

3.20 $\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^5}\,dx$

Optimal. Leaf size=164

$$-\frac{496a^3\tan(e+fx)}{315c^5f(1-\sec(e+fx))}-\frac{181a^3\tan(e+fx)}{315c^5f(1-\sec(e+fx))^2}-\frac{38a^3\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}+\frac{4a^3\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}$$

```
[Out] a^3*x/c^5-8/9*a^3*tan(f*x+e)/c^5/f/(1-sec(f*x+e))^5+4/63*a^3*tan(f*x+e)/c^5
/f/(1-sec(f*x+e))^4-38/105*a^3*tan(f*x+e)/c^5/f/(1-sec(f*x+e))^3-181/315*a^
3*tan(f*x+e)/c^5/f/(1-sec(f*x+e))^2-496/315*a^3*tan(f*x+e)/c^5/f/(1-sec(f*x
+e))
```

Rubi [A] time = 0.73, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797, 3799, 4000}

$$-\frac{496a^3\tan(e+fx)}{315c^5f(1-\sec(e+fx))}-\frac{181a^3\tan(e+fx)}{315c^5f(1-\sec(e+fx))^2}-\frac{38a^3\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}+\frac{4a^3\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4}-\frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (a^3*x)/c^5 - (8*a^3*Tan[e + f*x])/(9*c^5*f*(1 - Sec[e + f*x])^5) + (4*a^3*
Tan[e + f*x])/(63*c^5*f*(1 - Sec[e + f*x])^4) - (38*a^3*Tan[e + f*x])/(105*
c^5*f*(1 - Sec[e + f*x])^3) - (181*a^3*Tan[e + f*x])/(315*c^5*f*(1 - Sec[e
+ f*x])^2) - (496*a^3*Tan[e + f*x])/(315*c^5*f*(1 - Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3799

```
Int[csc[(e_.) + (f_.)*(x_)]^3*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)),
x] - Dist[1/(a^2*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*
(a*m - b*(2*m + 1)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a
^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 4000

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(cs
c[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> Simp[((A*b - a*B)*Cot[e +
 f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x] + Dist[(a*B*m + A*b*(m +
1))/(a*b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x], x]
/; FreeQ[{a, b, A, B, e, f}, x] && NeQ[A*b - a*B, 0] && EqQ[a^2 - b^2, 0] &
& NeQ[a*B*m + A*b*(m + 1), 0] && LtQ[m, -2^(-1)]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^3}{(c-c\sec(e+fx))^5}\,dx = \frac{\int \left(\frac{a^3}{(1-\sec(e+fx))^5} + \frac{3a^3\sec(e+fx)}{(1-\sec(e+fx))^5} + \frac{3a^3\sec^2(e+fx)}{(1-\sec(e+fx))^5} + \frac{a^3\sec^3(e+fx)}{(1-\sec(e+fx))^5}\right) dx}{c^5}$$

$$= \frac{a^3\int \frac{1}{(1-\sec(e+fx))^5}\,dx}{c^5} + \frac{a^3\int \frac{\sec^3(e+fx)}{(1-\sec(e+fx))^5}\,dx}{c^5} + \frac{\left(3a^3\right)\int \frac{\sec(e+fx)}{(1-\sec(e+fx))^5}\,dx}{c^5} + \frac{\left(3a^3\right)\int \frac{\mathrm{se}}{(1-}}{c}$$

$$= -\frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5} - \frac{a^3\int \frac{-9-4\sec(e+fx)}{(1-\sec(e+fx))^4}\,dx}{9c^5} + \frac{a^3\int \frac{(-5-9\sec(e+fx))\sec(e+fx)}{(1-\sec(e+fx))^4}\,dx}{9c^5} + \cdots$$

$$= -\frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5} + \frac{4a^3\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4} + \frac{a^3\int \frac{63+39\sec(e+fx)}{(1-\sec(e+fx))^3}\,dx}{63c^5} + \frac{a^3\int}{}$$

$$= -\frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5} + \frac{4a^3\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4} - \frac{38a^3\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3} - \frac{a}{}$$

$$= -\frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5} + \frac{4a^3\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4} - \frac{38a^3\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3} - \frac{}{3}$$

$$= \frac{a^3x}{c^5} - \frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5} + \frac{4a^3\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4} - \frac{38a^3\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}$$

$$= \frac{a^3x}{c^5} - \frac{8a^3\tan(e+fx)}{9c^5f(1-\sec(e+fx))^5} + \frac{4a^3\tan(e+fx)}{63c^5f(1-\sec(e+fx))^4} - \frac{38a^3\tan(e+fx)}{105c^5f(1-\sec(e+fx))^3}$$

Mathematica [A] time = 0.90, size = 283, normalized size = 1.73

$$\frac{a^3\csc\left(\frac{e}{2}\right)\csc^9\left(\frac{1}{2}(e+fx)\right)\left(-122850\sin\left(e+\frac{fx}{2}\right)+103278\sin\left(e+\frac{3fx}{2}\right)+73290\sin\left(2e+\frac{3fx}{2}\right)-51102\sin\left(2e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^3/(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (a^3*Csc[e/2]*Csc[(e + f*x)/2]^9*(39690*f*x*Cos[(f*x)/2] - 39690*f*x*Cos[e
+ (f*x)/2] - 26460*f*x*Cos[e + (3*f*x)/2] + 26460*f*x*Cos[2*e + (3*f*x)/2]
+ 11340*f*x*Cos[2*e + (5*f*x)/2] - 11340*f*x*Cos[3*e + (5*f*x)/2] - 2835*f*
x*Cos[3*e + (7*f*x)/2] + 2835*f*x*Cos[4*e + (7*f*x)/2] + 315*f*x*Cos[4*e +
(9*f*x)/2] - 315*f*x*Cos[5*e + (9*f*x)/2] - 142002*Sin[(f*x)/2] - 122850*Si
n[e + (f*x)/2] + 103278*Sin[e + (3*f*x)/2] + 73290*Sin[2*e + (3*f*x)/2] - 5
1102*Sin[2*e + (5*f*x)/2] - 24570*Sin[3*e + (5*f*x)/2] + 13878*Sin[3*e + (7
*f*x)/2] + 5040*Sin[4*e + (7*f*x)/2] - 2102*Sin[4*e + (9*f*x)/2]))/(161280*
c^5*f)
```

fricas [A] time = 0.44, size = 212, normalized size = 1.29

$$\frac{1051\,a^3\cos\left(fx+e\right)^5-1684\,a^3\cos\left(fx+e\right)^4+898\,a^3\cos\left(fx+e\right)^3+1468\,a^3\cos\left(fx+e\right)^2-1669\,a^3\cos\left(fx+\right.}{315\left(c^5f\cos\left(fx+e\right)^4-4\,c^5f\cos\left(fx+e\right)^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] 1/315*(1051*a^3*cos(f*x + e)^5 - 1684*a^3*cos(f*x + e)^4 + 898*a^3*cos(f*x
+ e)^3 + 1468*a^3*cos(f*x + e)^2 - 1669*a^3*cos(f*x + e) + 496*a^3 + 315*(a
^3*f*x*cos(f*x + e)^4 - 4*a^3*f*x*cos(f*x + e)^3 + 6*a^3*f*x*cos(f*x + e)^2
```

```
- 4*a^3*f*x*cos(f*x + e) + a^3*f*x)*sin(f*x + e))/((c^5*f*cos(f*x + e)^4 -
 4*c^5*f*cos(f*x + e)^3 + 6*c^5*f*cos(f*x + e)^2 - 4*c^5*f*cos(f*x + e) + c
^5*f)*sin(f*x + e))
```

giac [A] time = 0.56, size = 110, normalized size = 0.67

$$\frac{\frac{630\left(fx+e\right)a^3}{c^5}+\frac{1260\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^8-420\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^6+252\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^4-135\,a^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^2+35\,a^3}{c^5\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^9}}{630\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x, algorithm="giac")
```

```
[Out] 1/630*(630*(f*x + e)*a^3/c^5 + (1260*a^3*tan(1/2*f*x + 1/2*e)^8 - 420*a^3*t
an(1/2*f*x + 1/2*e)^6 + 252*a^3*tan(1/2*f*x + 1/2*e)^4 - 135*a^3*tan(1/2*f*
x + 1/2*e)^2 + 35*a^3)/(c^5*tan(1/2*f*x + 1/2*e)^9))/f
```

maple [A] time = 0.89, size = 133, normalized size = 0.81

$$\frac{a^3}{18f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^9}-\frac{3a^3}{14f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^7}+\frac{2a^3}{5f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}-\frac{2a^3}{3f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{2a^3}{f\,c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2a^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x)
```

```
[Out] 1/18/f*a^3/c^5/tan(1/2*e+1/2*f*x)^9-3/14/f*a^3/c^5/tan(1/2*e+1/2*f*x)^7+2/5
/f*a^3/c^5/tan(1/2*e+1/2*f*x)^5-2/3/f*a^3/c^5/tan(1/2*e+1/2*f*x)^3+2/f*a^3/
c^5/tan(1/2*e+1/2*f*x)+2/f*a^3/c^5*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.46, size = 403, normalized size = 2.46

$$a^3\left(\frac{10080\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^5}-\frac{\left(\frac{270\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\frac{1008\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}+\frac{2730\sin\left(fx+e\right)^6}{\left(\cos\left(fx+e\right)+1\right)^6}-\frac{9765\sin\left(fx+e\right)^8}{\left(\cos\left(fx+e\right)+1\right)^8}-35\right)\left(\cos\left(fx+e\right)+1\right)^9}{c^5\sin\left(fx+e\right)^9}\right)-\frac{3\,a^3\left(\frac{180\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] 1/5040*(a^3*(10080*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/c^5 - (270*sin(f
*x + e)^2/(cos(f*x + e) + 1)^2 - 1008*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 +
 2730*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 9765*sin(f*x + e)^8/(cos(f*x +
e) + 1)^8 - 35)*(cos(f*x + e) + 1)^9/(c^5*sin(f*x + e)^9)) - 3*a^3*(180*sin
(f*x + e)^2/(cos(f*x + e) + 1)^2 - 378*sin(f*x + e)^4/(cos(f*x + e) + 1)^4
+ 420*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 315*sin(f*x + e)^8/(cos(f*x + e
) + 1)^8 - 35)*(cos(f*x + e) + 1)^9/(c^5*sin(f*x + e)^9) - 15*a^3*(18*sin(f
*x + e)^2/(cos(f*x + e) + 1)^2 - 42*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 + 6
3*sin(f*x + e)^8/(cos(f*x + e) + 1)^8 - 7)*(cos(f*x + e) + 1)^9/(c^5*sin(f*
x + e)^9) - 7*a^3*(18*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 - 45*sin(f*x + e)
^8/(cos(f*x + e) + 1)^8 - 5)*(cos(f*x + e) + 1)^9/(c^5*sin(f*x + e)^9))/f
```

mupad [B] time = 1.46, size = 146, normalized size = 0.89

$$\frac{a^3\left(\frac{\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^9}{18}-\frac{3\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^7\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^2}{14}+\frac{2\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^5\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^4}{5}-\frac{2\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^3\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^6}{3}+2\cos\left(\frac{e}{2}+\frac{fx}{2}\right)\sin\left(\right.\right.}{c^5\,f\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3/(c - c/cos(e + f*x))^5,x)
```

```
[Out] (a^3*(cos(e/2 + (f*x)/2)^9/18 + 2*cos(e/2 + (f*x)/2)*sin(e/2 + (f*x)/2)^8 +
 sin(e/2 + (f*x)/2)^9*(e + f*x) - (2*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2
)^6)/3 + (2*cos(e/2 + (f*x)/2)^5*sin(e/2 + (f*x)/2)^4)/5 - (3*cos(e/2 + (f*
x)/2)^7*sin(e/2 + (f*x)/2)^2)/14))/(c^5*f*sin(e/2 + (f*x)/2)^9)
```

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

$$-\frac{a^3\left(\int \frac{3\sec\left(e+fx\right)}{\sec^5\left(e+fx\right)-5\sec^4\left(e+fx\right)+10\sec^3\left(e+fx\right)-10\sec^2\left(e+fx\right)+5\sec\left(e+fx\right)-1}\,dx+\int \frac{3\sec^2\left(e+fx\right)}{\sec^5\left(e+fx\right)-5\sec^4\left(e+fx\right)+10\sec^3\left(e+fx\right)-10\sec^2\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**5,x)
```

```
[Out] -a**3*(Integral(3*sec(e + f*x)/(sec(e + f*x)**5 - 5*sec(e + f*x)**4 + 10*se
c(e + f*x)**3 - 10*sec(e + f*x)**2 + 5*sec(e + f*x) - 1), x) + Integral(3*s
ec(e + f*x)**2/(sec(e + f*x)**5 - 5*sec(e + f*x)**4 + 10*sec(e + f*x)**3 -
10*sec(e + f*x)**2 + 5*sec(e + f*x) - 1), x) + Integral(sec(e + f*x)**3/(se
c(e + f*x)**5 - 5*sec(e + f*x)**4 + 10*sec(e + f*x)**3 - 10*sec(e + f*x)**2
 + 5*sec(e + f*x) - 1), x) + Integral(1/(sec(e + f*x)**5 - 5*sec(e + f*x)**
4 + 10*sec(e + f*x)**3 - 10*sec(e + f*x)**2 + 5*sec(e + f*x) - 1), x))/c**5
```

3.21 $\int \frac{(c-c\sec(e+fx))^5}{(a+a\sec(e+fx))^2}\,dx$

Optimal. Leaf size=136

$$\frac{13c^5\tan(e+fx)}{2a^2f}-\frac{47c^5\tanh^{-1}(\sin(e+fx))}{2a^2f}+\frac{112c^5\tan(e+fx)}{3a^2f(\sec(e+fx)+1)}+\frac{\tan(e+fx)\left(c^5-c^5\sec(e+fx)\right)}{2a^2f}+\frac{c^5x}{a^2}-$$

```
[Out] c^5*x/a^2-47/2*c^5*arctanh(sin(f*x+e))/a^2/f+13/2*c^5*tan(f*x+e)/a^2/f+112/
3*c^5*tan(f*x+e)/a^2/f/(1+sec(f*x+e))-32/3*c^5*tan(f*x+e)/f/(a+a*sec(f*x+e)
)^2+1/2*(c^5-c^5*sec(f*x+e))*tan(f*x+e)/a^2/f
```

Rubi [A] time = 0.40, antiderivative size = 153, normalized size of antiderivative = 1.12, number of steps used = 26, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {3904, 3886, 3473, 8, 2606, 2607, 30, 3767, 2621, 302, 207, 2620, 270, 288}

$$\frac{7c^5\tan(e+fx)}{a^2f}-\frac{64c^5\cot^3(e+fx)}{3a^2f}-\frac{48c^5\cot(e+fx)}{a^2f}+\frac{131c^5\csc^3(e+fx)}{6a^2f}+\frac{33c^5\csc(e+fx)}{2a^2f}-\frac{47c^5\tanh^{-1}(\sin}{2a^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^5/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (c^5*x)/a^2 - (47*c^5*ArcTanh[Sin[e + f*x]])/(2*a^2*f) - (48*c^5*Cot[e + f*
x])/(a^2*f) - (64*c^5*Cot[e + f*x]^3)/(3*a^2*f) + (33*c^5*Csc[e + f*x])/(2*
a^2*f) + (131*c^5*Csc[e + f*x]^3)/(6*a^2*f) - (c^5*Csc[e + f*x]^3*Sec[e + f
*x]^2)/(2*a^2*f) + (7*c^5*Tan[e + f*x])/(a^2*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 207

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

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 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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 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])
```

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])
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

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 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^5}{(a+a\sec(e+fx))^2}\,dx = \frac{\int \cot^4(e+fx)(c-c\sec(e+fx))^7\,dx}{a^2c^2}$$

$$= \frac{\int \left(c^7\cot^4(e+fx) - 7c^7\cot^3(e+fx)\csc(e+fx) + 21c^7\cot^2(e+fx)\csc^2(e+fx\right.}{}$$

$$= \frac{c^5\int \cot^4(e+fx)\,dx}{a^2} - \frac{c^5\int \csc^4(e+fx)\sec^3(e+fx)\,dx}{a^2} - \frac{\left(7c^5\right)\int \cot^3(e+fx)\,c}{a^2}$$

$$= -\frac{c^5\cot^3(e+fx)}{3a^2f} - \frac{c^5\int \cot^2(e+fx)\,dx}{a^2} + \frac{c^5\,\text{Subst}\left(\int \frac{x^6}{\left(-1+x^2\right)^2}\,dx, x, \csc(e+fx)\right)}{a^2f}$$

$$= -\frac{34c^5\cot(e+fx)}{a^2f} - \frac{19c^5\cot^3(e+fx)}{a^2f} - \frac{7c^5\csc(e+fx)}{a^2f} + \frac{14c^5\csc^3(e+fx)}{a^2f} - c$$

$$= \frac{c^5x}{a^2} - \frac{48c^5\cot(e+fx)}{a^2f} - \frac{64c^5\cot^3(e+fx)}{3a^2f} + \frac{14c^5\csc(e+fx)}{a^2f} + \frac{21c^5\csc^3(e+f}{a^2f}$$

$$= \frac{c^5x}{a^2} - \frac{21c^5\tanh^{-1}(\sin(e+fx))}{a^2f} - \frac{48c^5\cot(e+fx)}{a^2f} - \frac{64c^5\cot^3(e+fx)}{3a^2f} + \frac{33c^5 c}{2}$$

$$= \frac{c^5x}{a^2} - \frac{47c^5\tanh^{-1}(\sin(e+fx))}{2a^2f} - \frac{48c^5\cot(e+fx)}{a^2f} - \frac{64c^5\cot^3(e+fx)}{3a^2f} + \frac{33c^5 c}{2}$$

Mathematica [B] time = 3.15, size = 384, normalized size = 2.82

$$\frac{\cos^3(e+fx)\cot\left(\frac{1}{2}(e+fx)\right)\csc^6\left(\frac{1}{2}(e+fx)\right)(c-c\sec(e+fx))^5\left(-\frac{64\tan\left(\frac{e}{2}\right)\cot\left(\frac{1}{2}(e+fx)\right)\csc^2\left(\frac{1}{2}(e+fx)\right)}{f} - \frac{64\sec\left(\frac{e}{2}\right)\sin}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^5/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (Cos[e + f*x]^3*Cot[(e + f*x)/2]*Csc[(e + f*x)/2]^6*(c - c*Sec[e + f*x])^5*
((-320*Cot[(e + f*x)/2]^2*Csc[(e + f*x)/2]*Sec[e/2]*Sin[(f*x)/2])/f - (64*C
sc[(e + f*x)/2]^3*Sec[e/2]*Sin[(f*x)/2])/f + 3*Cot[(e + f*x)/2]^3*(-4*x - (
94*Log[Cos[(e + f*x)/2] - Sin[(e + f*x)/2]])/f + (94*Log[Cos[(e + f*x)/2] +
 Sin[(e + f*x)/2]])/f + 1/(f*(Cos[(e + f*x)/2] - Sin[(e + f*x)/2])^2) - 1/(
f*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2])^2) - (28*Sin[f*x])/(f*(Cos[e/2] - S
in[e/2])*(Cos[e/2] + Sin[e/2])*(Cos[(e + f*x)/2] - Sin[(e + f*x)/2])*(Cos[(
e + f*x)/2] + Sin[(e + f*x)/2]))) - (64*Cot[(e + f*x)/2]*Csc[(e + f*x)/2]^2
*Tan[e/2])/f))/(96*a^2*(1 + Sec[e + f*x])^2)
```

fricas [A] time = 0.46, size = 242, normalized size = 1.78

$$\frac{12\,c^5fx\cos\left(fx+e\right)^4 + 24\,c^5fx\cos\left(fx+e\right)^3 + 12\,c^5fx\cos\left(fx+e\right)^2 - 141\left(c^5\cos\left(fx+e\right)^4 + 2\,c^5\cos\left(fx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/12*(12*c^5*f*x*cos(f*x + e)^4 + 24*c^5*f*x*cos(f*x + e)^3 + 12*c^5*f*x*co
s(f*x + e)^2 - 141*(c^5*cos(f*x + e)^4 + 2*c^5*cos(f*x + e)^3 + c^5*cos(f*x
```

```
 + e)^2)*log(sin(f*x + e) + 1) + 141*(c^5*cos(f*x + e)^4 + 2*c^5*cos(f*x +
e)^3 + c^5*cos(f*x + e)^2)*log(-sin(f*x + e) + 1) + 2*(202*c^5*cos(f*x + e)
^3 + 305*c^5*cos(f*x + e)^2 + 36*c^5*cos(f*x + e) - 3*c^5)*sin(f*x + e))/(a
^2*f*cos(f*x + e)^4 + 2*a^2*f*cos(f*x + e)^3 + a^2*f*cos(f*x + e)^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((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*((-8/3*tan((f*x+exp(1))/2)^3*c^5*a^4-16*tan((f*x+exp(1))/2)*c^
5*a^4)/a^6-(-15*tan((f*x+exp(1))/2)^3*c^5+13*tan((f*x+exp(1))/2)*c^5)*1/2/a
^2/(tan((f*x+exp(1))/2)^2-1)^2-2*c^5*1/2/a^2*(f*x+exp(1))/2-47*c^5*1/4/a^2*
ln(abs(tan((f*x+exp(1))/2)-1))+47*c^5*1/4/a^2*ln(abs(tan((f*x+exp(1))/2)+1)
))
```

maple [A] time = 0.71, size = 207, normalized size = 1.52

$$\frac{16c^5\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^2}+\frac{32c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^2}-\frac{c^5}{2f\,a^2\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)^2}-\frac{15c^5}{2f\,a^2\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}+\frac{47c^5\ln\left(\tan\left(\frac{e}{2}+\right.\right.}{2f\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^2,x)
```

```
[Out] 16/3/f*c^5/a^2*tan(1/2*e+1/2*f*x)^3+32/f*c^5/a^2*tan(1/2*e+1/2*f*x)-1/2/f*c
^5/a^2/(tan(1/2*e+1/2*f*x)-1)^2-15/2/f*c^5/a^2/(tan(1/2*e+1/2*f*x)-1)+47/2/
f*c^5/a^2*ln(tan(1/2*e+1/2*f*x)-1)+1/2/f*c^5/a^2/(tan(1/2*e+1/2*f*x)+1)^2-1
5/2/f*c^5/a^2/(tan(1/2*e+1/2*f*x)+1)-47/2/f*c^5/a^2*ln(tan(1/2*e+1/2*f*x)+1
)+2/f*c^5/a^2*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 603, normalized size = 4.43

$$c^5\left(\frac{6\left(\frac{3\sin(fx+e)}{\cos(fx+e)+1}-\frac{5\sin(fx+e)^3}{(\cos(fx+e)+1)^3}\right)}{a^2-\frac{2a^2\sin(fx+e)^2}{(\cos(fx+e)+1)^2}+\frac{a^2\sin(fx+e)^4}{(\cos(fx+e)+1)^4}}+\frac{\frac{21\sin(fx+e)}{\cos(fx+e)+1}+\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}}{a^2}-\frac{21\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}+1\right)}{a^2}+\frac{21\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}-1\right)}{a^2}\right)+5c^5\left(\frac{\frac{15\sin(fx+e)}{\cos(fx+e)+1}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/6*(c^5*(6*(3*sin(f*x + e)/(cos(f*x + e) + 1) - 5*sin(f*x + e)^3/(cos(f*x
+ e) + 1)^3)/(a^2 - 2*a^2*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + a^2*sin(f*x
 + e)^4/(cos(f*x + e) + 1)^4) + (21*sin(f*x + e)/(cos(f*x + e) + 1) + sin(f
*x + e)^3/(cos(f*x + e) + 1)^3)/a^2 - 21*log(sin(f*x + e)/(cos(f*x + e) + 1
) + 1)/a^2 + 21*log(sin(f*x + e)/(cos(f*x + e) + 1) - 1)/a^2) + 5*c^5*((15*
sin(f*x + e)/(cos(f*x + e) + 1) + sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2
- 12*log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/a^2 + 12*log(sin(f*x + e)/(co
s(f*x + e) + 1) - 1)/a^2 + 12*sin(f*x + e)/((a^2 - a^2*sin(f*x + e)^2/(cos(
f*x + e) + 1)^2)*(cos(f*x + e) + 1))) + 10*c^5*((9*sin(f*x + e)/(cos(f*x +
e) + 1) + sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2 - 6*log(sin(f*x + e)/(co
s(f*x + e) + 1) + 1)/a^2 + 6*log(sin(f*x + e)/(cos(f*x + e) + 1) - 1)/a^2)
- c^5*((9*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e) +
```

```
1)^3)/a^2 - 12*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/a^2) + 10*c^5*(3*sin
(f*x + e)/(cos(f*x + e) + 1) + sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2 - 5
*c^5*(3*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e) + 1)
^3)/a^2)/f
```

mupad [B] time = 1.50, size = 145, normalized size = 1.07

$$\frac{c^5\,x}{a^2}-\frac{15\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3-13\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{f\,\left(a^2\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4-2\,a^2\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2+a^2\right)}+\frac{32\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{a^2\,f}+\frac{16\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{3\,a^2\,f}-\frac{47\,c^5\,\mathrm{atanh}\left(\right.}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^5/(a + a/cos(e + f*x))^2,x)
```

```
[Out] (c^5*x)/a^2 - (15*c^5*tan(e/2 + (f*x)/2)^3 - 13*c^5*tan(e/2 + (f*x)/2))/(f*
(a^2*tan(e/2 + (f*x)/2)^4 - 2*a^2*tan(e/2 + (f*x)/2)^2 + a^2)) + (32*c^5*ta
n(e/2 + (f*x)/2))/(a^2*f) + (16*c^5*tan(e/2 + (f*x)/2)^3)/(3*a^2*f) - (47*c
^5*atanh(tan(e/2 + (f*x)/2)))/(a^2*f)
```

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

$$-\frac{c^5\left(\int\frac{5\sec\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{10\sec^2\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\right)dx+\int\frac{10\sec^3\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{}{\sec^2\left(e+\right.}\right.\right.}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**5/(a+a*sec(f*x+e))**2,x)
```

```
[Out] -c**5*(Integral(5*sec(e + f*x)/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) +
 Integral(-10*sec(e + f*x)**2/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) +
Integral(10*sec(e + f*x)**3/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + In
tegral(-5*sec(e + f*x)**4/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + Inte
gral(sec(e + f*x)**5/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + Integral(
-1/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x))/a**2
```

3.22 $\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^2}\,dx$

Optimal. Leaf size=102

$$\frac{c^4\tan(e+fx)}{a^2f}-\frac{32c^4\cot^3(e+fx)}{3a^2f}-\frac{16c^4\cot(e+fx)}{a^2f}+\frac{32c^4\csc^3(e+fx)}{3a^2f}-\frac{6c^4\tanh^{-1}(\sin(e+fx))}{a^2f}+\frac{c^4x}{a^2}$$

```
[Out] c^4*x/a^2-6*c^4*arctanh(sin(f*x+e))/a^2/f-16*c^4*cot(f*x+e)/a^2/f-32/3*c^4*
cot(f*x+e)^3/a^2/f+32/3*c^4*csc(f*x+e)^3/a^2/f+c^4*tan(f*x+e)/a^2/f
```

Rubi [A] time = 0.31, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 13, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {3904, 3886, 3473, 8, 2606, 2607, 30, 3767, 2621, 302, 207, 2620, 270}

$$\frac{c^4\tan(e+fx)}{a^2f}-\frac{32c^4\cot^3(e+fx)}{3a^2f}-\frac{16c^4\cot(e+fx)}{a^2f}+\frac{32c^4\csc^3(e+fx)}{3a^2f}-\frac{6c^4\tanh^{-1}(\sin(e+fx))}{a^2f}+\frac{c^4x}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (c^4*x)/a^2 - (6*c^4*ArcTanh[Sin[e + f*x]])/(a^2*f) - (16*c^4*Cot[e + f*x])
/(a^2*f) - (32*c^4*Cot[e + f*x]^3)/(3*a^2*f) + (32*c^4*Csc[e + f*x]^3)/(3*a
^2*f) + (c^4*Tan[e + f*x])/(a^2*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 207

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

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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 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])
```

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])
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

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 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^2}\,dx = \frac{\int \cot^4(e+fx)(c-c\sec(e+fx))^6\,dx}{a^2c^2}$$

$$= \frac{\int \left(c^6\cot^4(e+fx) - 6c^6\cot^3(e+fx)\csc(e+fx) + 15c^6\cot^2(e+fx)\csc^2(e+fx) - \right.}{}$$

$$= \frac{c^4\int \cot^4(e+fx)\,dx}{a^2} + \frac{c^4\int \csc^4(e+fx)\sec^2(e+fx)\,dx}{a^2} - \frac{\left(6c^4\right)\int \cot^3(e+fx)\csc(}{a^2}$$

$$= -\frac{c^4\cot^3(e+fx)}{3a^2f} - \frac{c^4\int \cot^2(e+fx)\,dx}{a^2} + \frac{c^4\,\text{Subst}\left(\int \frac{\left(1+x^2\right)^2}{x^4}\,dx, x, \tan(e+fx)\right)}{a^2f} +$$

$$= -\frac{14c^4\cot(e+fx)}{a^2f} - \frac{31c^4\cot^3(e+fx)}{3a^2f} - \frac{6c^4\csc(e+fx)}{a^2f} + \frac{26c^4\csc^3(e+fx)}{3a^2f} + \frac{c^4\int}{}$$

$$= \frac{c^4x}{a^2} - \frac{16c^4\cot(e+fx)}{a^2f} - \frac{32c^4\cot^3(e+fx)}{3a^2f} + \frac{32c^4\csc^3(e+fx)}{3a^2f} + \frac{c^4\tan(e+fx)}{a^2f} +$$

$$= \frac{c^4x}{a^2} - \frac{6c^4\tanh^{-1}(\sin(e+fx))}{a^2f} - \frac{16c^4\cot(e+fx)}{a^2f} - \frac{32c^4\cot^3(e+fx)}{3a^2f} + \frac{32c^4\csc^3(}{3a^2}$$

Mathematica [B] time = 6.26, size = 753, normalized size = 7.38

$$\frac{x\cos^2(e+fx)\cot^4\left(\frac{e}{2}+\frac{fx}{2}\right)\csc^4\left(\frac{e}{2}+\frac{fx}{2}\right)(c-c\sec(e+fx))^4}{4(a\sec(e+fx)+a)^2} + \frac{\sin\left(\frac{fx}{2}\right)\cos^2(e+fx)\cot^4\left(\frac{e}{2}+\frac{fx}{2}\right)\csc^4\left(\frac{e}{2}+\frac{f}{2}\right.}{4f\left(\cos\left(\frac{e}{2}\right)-\sin\left(\frac{e}{2}\right)\right)(a\sec(e+fx)+a)^2\left(\cos\left(\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (x*Cos[e + f*x]^2*Cot[e/2 + (f*x)/2]^4*Csc[e/2 + (f*x)/2]^4*(c - c*Sec[e +
f*x])^4)/(4*(a + a*Sec[e + f*x])^2) + (3*Cos[e + f*x]^2*Cot[e/2 + (f*x)/2]^
4*Csc[e/2 + (f*x)/2]^4*Log[Cos[e/2 + (f*x)/2] - Sin[e/2 + (f*x)/2]]*(c - c*
Sec[e + f*x])^4)/(2*f*(a + a*Sec[e + f*x])^2) - (3*Cos[e + f*x]^2*Cot[e/2 +
 (f*x)/2]^4*Csc[e/2 + (f*x)/2]^4*Log[Cos[e/2 + (f*x)/2] + Sin[e/2 + (f*x)/2
]]*(c - c*Sec[e + f*x])^4)/(2*f*(a + a*Sec[e + f*x])^2) + (4*Cos[e + f*x]^2
*Cot[e/2 + (f*x)/2]^3*Csc[e/2 + (f*x)/2]^5*Sec[e/2]*(c - c*Sec[e + f*x])^4*
Sin[(f*x)/2])/(3*f*(a + a*Sec[e + f*x])^2) + (2*Cos[e + f*x]^2*Cot[e/2 + (f
*x)/2]*Csc[e/2 + (f*x)/2]^7*Sec[e/2]*(c - c*Sec[e + f*x])^4*Sin[(f*x)/2])/(
3*f*(a + a*Sec[e + f*x])^2) + (Cos[e + f*x]^2*Cot[e/2 + (f*x)/2]^4*Csc[e/2
+ (f*x)/2]^4*(c - c*Sec[e + f*x])^4*Sin[(f*x)/2])/(4*f*(a + a*Sec[e + f*x])
^2*(Cos[e/2] - Sin[e/2])*(Cos[e/2 + (f*x)/2] - Sin[e/2 + (f*x)/2])) + (Cos[
e + f*x]^2*Cot[e/2 + (f*x)/2]^4*Csc[e/2 + (f*x)/2]^4*(c - c*Sec[e + f*x])^4
*Sin[(f*x)/2])/(4*f*(a + a*Sec[e + f*x])^2*(Cos[e/2] + Sin[e/2])*(Cos[e/2 +
 (f*x)/2] + Sin[e/2 + (f*x)/2])) + (2*Cos[e + f*x]^2*Cot[e/2 + (f*x)/2]^2*C
sc[e/2 + (f*x)/2]^6*(c - c*Sec[e + f*x])^4*Tan[e/2])/(3*f*(a + a*Sec[e + f*
x])^2)
```

fricas [B] time = 0.49, size = 220, normalized size = 2.16

$$\frac{3\,c^4fx\cos\left(fx+e\right)^3 + 6\,c^4fx\cos\left(fx+e\right)^2 + 3\,c^4fx\cos\left(fx+e\right) - 9\left(c^4\cos\left(fx+e\right)^3 + 2\,c^4\cos\left(fx+e\right)^2 + c^4\,\mathrm{c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/3*(3*c^4*f*x*cos(f*x + e)^3 + 6*c^4*f*x*cos(f*x + e)^2 + 3*c^4*f*x*cos(f*
x + e) - 9*(c^4*cos(f*x + e)^3 + 2*c^4*cos(f*x + e)^2 + c^4*cos(f*x + e))*l
og(sin(f*x + e) + 1) + 9*(c^4*cos(f*x + e)^3 + 2*c^4*cos(f*x + e)^2 + c^4*c
os(f*x + e))*log(-sin(f*x + e) + 1) + (19*c^4*cos(f*x + e)^2 + 38*c^4*cos(f
*x + e) + 3*c^4)*sin(f*x + e))/(a^2*f*cos(f*x + e)^3 + 2*a^2*f*cos(f*x + e)
^2 + a^2*f*cos(f*x + e))
```

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((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)2/f*((4/3*tan((f*x+exp(1))/2)^3*c^4*a^4+4*tan((f*x+exp(1))/2)*c^4*a
^4)/a^6-tan((f*x+exp(1))/2)*c^4/a^2/(tan((f*x+exp(1))/2)^2-1)+2*c^4*1/2/a^2
*(f*x+exp(1))/2+3*c^4/a^2*ln(abs(tan((f*x+exp(1))/2)-1))-3*c^4/a^2*ln(abs(t
an((f*x+exp(1))/2)+1)))
```

maple [A] time = 0.68, size = 159, normalized size = 1.56

$$\frac{8c^4\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^2}+\frac{8c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^2}-\frac{c^4}{f\,a^2\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}+\frac{6c^4\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}{f\,a^2}-\frac{c^4}{f\,a^2\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^2,x)
```

```
[Out] 8/3/f*c^4/a^2*tan(1/2*e+1/2*f*x)^3+8/f*c^4/a^2*tan(1/2*e+1/2*f*x)-1/f*c^4/a
^2/(tan(1/2*e+1/2*f*x)-1)+6/f*c^4/a^2*ln(tan(1/2*e+1/2*f*x)-1)-1/f*c^4/a^2/
(tan(1/2*e+1/2*f*x)+1)-6/f*c^4/a^2*ln(tan(1/2*e+1/2*f*x)+1)+2/f*c^4/a^2*arc
tan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 413, normalized size = 4.05

$$c^4\left(\frac{\frac{15\sin(fx+e)}{\cos(fx+e)+1}+\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}}{a^2}-\frac{12\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}+1\right)}{a^2}+\frac{12\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}-1\right)}{a^2}+\frac{12\sin(fx+e)}{\left(a^2-\frac{a^2\sin(fx+e)^2}{(\cos(fx+e)+1)^2}\right)(\cos(fx+e)+1)}\right)+4c^4\left(\frac{9\sin(f\ldots}{\cos(fx+\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/6*(c^4*((15*sin(f*x + e)/(cos(f*x + e) + 1) + sin(f*x + e)^3/(cos(f*x + e
) + 1)^3)/a^2 - 12*log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/a^2 + 12*log(si
n(f*x + e)/(cos(f*x + e) + 1) - 1)/a^2 + 12*sin(f*x + e)/((a^2 - a^2*sin(f*
x + e)^2/(cos(f*x + e) + 1)^2)*(cos(f*x + e) + 1))) + 4*c^4*((9*sin(f*x + e
)/(cos(f*x + e) + 1) + sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2 - 6*log(sin
(f*x + e)/(cos(f*x + e) + 1) + 1)/a^2 + 6*log(sin(f*x + e)/(cos(f*x + e) +
1) - 1)/a^2) - c^4*((9*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(co
s(f*x + e) + 1)^3)/a^2 - 12*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/a^2) +
6*c^4*(3*sin(f*x + e)/(cos(f*x + e) + 1) + sin(f*x + e)^3/(cos(f*x + e) + 1
)^3)/a^2 - 4*c^4*(3*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f
*x + e) + 1)^3)/a^2)/f
```

mupad [B] time = 1.47, size = 112, normalized size = 1.10

$$\frac{c^4\,x}{a^2}+\frac{8\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{a^2\,f}+\frac{8\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}{3\,a^2\,f}-\frac{12\,c^4\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)}{a^2\,f}-\frac{2\,c^4\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{f\,\left(a^2\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2-a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^2,x)
```

```
[Out] (c^4*x)/a^2 + (8*c^4*tan(e/2 + (f*x)/2))/(a^2*f) + (8*c^4*tan(e/2 + (f*x)/2
)^3)/(3*a^2*f) - (12*c^4*atanh(tan(e/2 + (f*x)/2)))/(a^2*f) - (2*c^4*tan(e/
2 + (f*x)/2))/(f*(a^2*tan(e/2 + (f*x)/2)^2 - a^2))
```

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

$$\frac{c^4\left(\int\left(-\frac{4\sec\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\right)dx+\int\frac{6\sec^2\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{4\sec^3\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\right)dx+\int\frac{\sec}{\sec^2\left(e+fx\right)}\right.}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**4/(a+a*sec(f*x+e))**2,x)
```

```
[Out] c**4*(Integral(-4*sec(e + f*x)/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) +
 Integral(6*sec(e + f*x)**2/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + In
tegral(-4*sec(e + f*x)**3/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + Inte
gral(sec(e + f*x)**4/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + Integral(
1/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x))/a**2
```

3.23 $\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^2}\,dx$

Optimal. Leaf size=85

$$-\frac{c^3\tanh^{-1}(\sin(e+fx))}{a^2f}+\frac{4c^3\tan(e+fx)}{3a^2f(\sec(e+fx)+1)}-\frac{8c^3\tan(e+fx)}{3a^2f(\sec(e+fx)+1)^2}+\frac{c^3x}{a^2}$$

```
[Out] c^3*x/a^2-c^3*arctanh(sin(f*x+e))/a^2/f-8/3*c^3*tan(f*x+e)/a^2/f/(1+sec(f*x
+e))^2+4/3*c^3*tan(f*x+e)/a^2/f/(1+sec(f*x+e))
```

Rubi [A] time = 0.33, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3903, 3777, 3919, 3794, 3796, 3797, 3799, 3998, 3770}

$$-\frac{c^3\tanh^{-1}(\sin(e+fx))}{a^2f}+\frac{4c^3\tan(e+fx)}{3a^2f(\sec(e+fx)+1)}-\frac{8c^3\tan(e+fx)}{3a^2f(\sec(e+fx)+1)^2}+\frac{c^3x}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (c^3*x)/a^2 - (c^3*ArcTanh[Sin[e + f*x]])/(a^2*f) - (8*c^3*Tan[e + f*x])/(3
*a^2*f*(1 + Sec[e + f*x])^2) + (4*c^3*Tan[e + f*x])/(3*a^2*f*(1 + Sec[e + f
*x]))
```

Rule 3770

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

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3799

```
Int[csc[(e_.) + (f_.)*(x_)]^3*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)),
x] - Dist[1/(a^2*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*
(a*m - b*(2*m + 1)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a
^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3998

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/(csc[(
e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbol] :> Dist[B/b, Int[Csc[e + f*x],
x], x] + Dist[(A*b - a*B)/b, Int[Csc[e + f*x]/(a + b*Csc[e + f*x]), x], x]
/; FreeQ[{a, b, e, f, A, B}, x] && NeQ[A*b - a*B, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^2}\,dx &= \frac{\int \left(\frac{c^3}{(1+\sec(e+fx))^2}-\frac{3c^3\sec(e+fx)}{(1+\sec(e+fx))^2}+\frac{3c^3\sec^2(e+fx)}{(1+\sec(e+fx))^2}-\frac{c^3\sec^3(e+fx)}{(1+\sec(e+fx))^2}\right)dx}{a^2}\\
&= \frac{c^3\int \frac{1}{(1+\sec(e+fx))^2}\,dx}{a^2}-\frac{c^3\int \frac{\sec^3(e+fx)}{(1+\sec(e+fx))^2}\,dx}{a^2}-\frac{\left(3c^3\right)\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{a^2}+\frac{\left(3c^3\right)\int \frac{\mathrm{se}}{(1+\mathrm{s}}}{a}\\
&= -\frac{8c^3\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}-\frac{c^3\int \frac{-3+\sec(e+fx)}{1+\sec(e+fx)}\,dx}{3a^2}-\frac{c^3\int \frac{\sec(e+fx)(-2+3\sec(e+fx))}{1+\sec(e+fx)}\,dx}{3a^2}-\frac{c^3}{}\\
&= \frac{c^3x}{a^2}-\frac{8c^3\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}+\frac{c^3\tan(e+fx)}{a^2f(1+\sec(e+fx))}-\frac{c^3\int \sec(e+fx)\,dx}{a^2}-\frac{\left(4c^3\right)}{}\\
&= \frac{c^3x}{a^2}-\frac{c^3\tanh^{-1}(\sin(e+fx))}{a^2f}-\frac{8c^3\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}+\frac{4c^3\tan(e+fx)}{3a^2f(1+\sec(e+fx))}
\end{aligned}$$

Mathematica [B] time = 1.10, size = 216, normalized size = 2.54

$$-\frac{c^3(\cos(e+fx)-1)^3\cot\left(\frac{1}{2}(e+fx)\right)\csc^2\left(\frac{1}{2}(e+fx)\right)\left(4\tan\left(\frac{e}{2}\right)\cot\left(\frac{1}{2}(e+fx)\right)\csc^2\left(\frac{1}{2}(e+fx)\right)+4\sec\left(\frac{e}{2}\right)\sin}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^2,x]
```

[Out] -1/6*(c^3*(-1 + Cos[e + f*x])^3*Cot[(e + f*x)/2]*Csc[(e + f*x)/2]^2*(3*Cot[
(e + f*x)/2]^3*(f*x + Log[Cos[(e + f*x)/2] - Sin[(e + f*x)/2]] - Log[Cos[(e
 + f*x)/2] + Sin[(e + f*x)/2]]) - 4*Cot[(e + f*x)/2]^2*Csc[(e + f*x)/2]*Sec
[e/2]*Sin[(f*x)/2] + 4*Csc[(e + f*x)/2]^3*Sec[e/2]*Sin[(f*x)/2] + 4*Cot[(e
+ f*x)/2]*Csc[(e + f*x)/2]^2*Tan[e/2]))/(a^2*f*(1 + Cos[e + f*x])^2)

fricas [B] time = 0.46, size = 173, normalized size = 2.04

$$\frac{6 c^3 f x \cos\left(fx+e\right)^2 + 12 c^3 f x \cos\left(fx+e\right) + 6 c^3 f x - 3\left(c^3 \cos\left(fx+e\right)^2 + 2 c^3 \cos\left(fx+e\right) + c^3\right)\log\left(\sin\left(f\right.\right.}{6\left(a^2 f \cos\left(fx+e\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^2,x, algorithm="fricas")

[Out] 1/6*(6*c^3*f*x*cos(f*x + e)^2 + 12*c^3*f*x*cos(f*x + e) + 6*c^3*f*x - 3*(c^
3*cos(f*x + e)^2 + 2*c^3*cos(f*x + e) + c^3)*log(sin(f*x + e) + 1) + 3*(c^3
*cos(f*x + e)^2 + 2*c^3*cos(f*x + e) + c^3)*log(-sin(f*x + e) + 1) - 8*(c^3
*cos(f*x + e) - c^3)*sin(f*x + e))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x
+ e) + a^2*f)

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((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^2,x, algorithm="giac")

[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
pi/x/2)-2/f(-c^3*1/2/a^2*ln(abs(tan((f*x+exp(1))/2)-1))+c^3*1/2/a^2*ln(ab
s(tan((f*x+exp(1))/2)+1))-2*c^3*1/2/a^2*(f*x+exp(1))/2-2/3*tan((f*x+exp(1))
/2)^3*c^3*a^4/a^6)

maple [A] time = 0.82, size = 90, normalized size = 1.06

$$\frac{4c^3\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^2}+\frac{c^3\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}{f\,a^2}-\frac{c^3\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+1\right)}{f\,a^2}+\frac{2c^3\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^2,x)

[Out] 4/3/f*c^3/a^2*tan(1/2*e+1/2*f*x)^3+1/f*c^3/a^2*ln(tan(1/2*e+1/2*f*x)-1)-1/f
*c^3/a^2*ln(tan(1/2*e+1/2*f*x)+1)+2/f*c^3/a^2*arctan(tan(1/2*e+1/2*f*x))

maxima [B] time = 0.43, size = 268, normalized size = 3.15

$$\frac{c^3\left(\frac{\frac{9\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}+\frac{\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}}{a^2}-\frac{6\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}+1\right)}{a^2}+\frac{6\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-1\right)}{a^2}\right)-c^3\left(\frac{\frac{9\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}}{a^2}-\frac{12\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)}\right.}{a^2}\right.}{6f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^2,x, algorithm="maxima")

[Out] 1/6*(c^3*((9*sin(f*x + e)/(cos(f*x + e) + 1) + sin(f*x + e)^3/(cos(f*x + e)
 + 1)^3)/a^2 - 6*log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/a^2 + 6*log(sin(f

```
*x + e)/(cos(f*x + e) + 1) - 1)/a^2) - c^3*((9*sin(f*x + e)/(cos(f*x + e) +
 1) - sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2 - 12*arctan(sin(f*x + e)/(co
s(f*x + e) + 1))/a^2) + 3*c^3*(3*sin(f*x + e)/(cos(f*x + e) + 1) + sin(f*x
+ e)^3/(cos(f*x + e) + 1)^3)/a^2 - 3*c^3*(3*sin(f*x + e)/(cos(f*x + e) + 1)
 - sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2)/f
```

mupad [B] time = 1.41, size = 46, normalized size = 0.54

$$\frac{c^3\,x}{a^2}-\frac{c^3\,\left(2\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)-\frac{4\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^3}{3}\right)}{a^2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^2,x)
```

```
[Out] (c^3*x)/a^2 - (c^3*(2*atanh(tan(e/2 + (f*x)/2)) - (4*tan(e/2 + (f*x)/2)^3)/
3))/(a^2*f)
```

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

$$-\frac{c^3\left(\int\frac{3\sec\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{3\sec^2\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\right)dx+\int\frac{\sec^3\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{}{\sec^2\left(e+fx\right)}\right.\right.}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**3/(a+a*sec(f*x+e))**2,x)
```

```
[Out] -c**3*(Integral(3*sec(e + f*x)/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) +
 Integral(-3*sec(e + f*x)**2/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + I
ntegral(sec(e + f*x)**3/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + Integr
al(-1/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x))/a**2
```

3.24 $\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^2}\,dx$

Optimal. Leaf size=67

$$-\frac{4c^2\tan(e+fx)}{3a^2f(\sec(e+fx)+1)}-\frac{4c^2\tan(e+fx)}{3a^2f(\sec(e+fx)+1)^2}+\frac{c^2x}{a^2}$$

```
[Out] c^2*x/a^2-4/3*c^2*tan(f*x+e)/a^2/f/(1+sec(f*x+e))^2-4/3*c^2*tan(f*x+e)/a^2/
f/(1+sec(f*x+e))
```

Rubi [A] time = 0.23, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {3903, 3777, 3919, 3794, 3796, 3797}

$$-\frac{4c^2\tan(e+fx)}{3a^2f(\sec(e+fx)+1)}-\frac{4c^2\tan(e+fx)}{3a^2f(\sec(e+fx)+1)^2}+\frac{c^2x}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (c^2*x)/a^2 - (4*c^2*Tan[e + f*x])/(3*a^2*f*(1 + Sec[e + f*x])^2) - (4*c^2*
Tan[e + f*x])/(3*a^2*f*(1 + Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
```

```
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^2}\,dx &= \frac{\int \left(\frac{c^2}{(1+\sec(e+fx))^2}-\frac{2c^2\sec(e+fx)}{(1+\sec(e+fx))^2}+\frac{c^2\sec^2(e+fx)}{(1+\sec(e+fx))^2}\right)dx}{a^2}\\
&= \frac{c^2\int \frac{1}{(1+\sec(e+fx))^2}\,dx}{a^2}+\frac{c^2\int \frac{\sec^2(e+fx)}{(1+\sec(e+fx))^2}\,dx}{a^2}-\frac{\left(2c^2\right)\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{a^2}\\
&= -\frac{4c^2\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}-\frac{c^2\int \frac{-3+\sec(e+fx)}{1+\sec(e+fx)}\,dx}{3a^2}\\
&= \frac{c^2x}{a^2}-\frac{4c^2\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}-\frac{\left(4c^2\right)\int \frac{\sec(e+fx)}{1+\sec(e+fx)}\,dx}{3a^2}\\
&= \frac{c^2x}{a^2}-\frac{4c^2\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}-\frac{4c^2\tan(e+fx)}{3a^2f(1+\sec(e+fx))}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 67, normalized size = 1.00

$$\frac{c^2\left(\frac{2\tan^{-1}\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f}+\frac{2\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)}{3f}-\frac{2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (c^2*((2*ArcTan[Tan[e/2 + (f*x)/2]])/f - (2*Tan[e/2 + (f*x)/2])/f + (2*Tan[
e/2 + (f*x)/2]^3)/(3*f)))/a^2
```

fricas [A] time = 0.45, size = 94, normalized size = 1.40

$$\frac{3\,c^2fx\cos\left(fx+e\right)^2+6\,c^2fx\cos\left(fx+e\right)+3\,c^2fx-4\left(2\,c^2\cos\left(fx+e\right)+c^2\right)\sin\left(fx+e\right)}{3\left(a^2f\cos\left(fx+e\right)^2+2\,a^2f\cos\left(fx+e\right)+a^2f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/3*(3*c^2*f*x*cos(f*x + e)^2 + 6*c^2*f*x*cos(f*x + e) + 3*c^2*f*x - 4*(2*c
^2*cos(f*x + e) + c^2)*sin(f*x + e))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*
x + e) + a^2*f)
```

giac [A] time = 0.39, size = 63, normalized size = 0.94

$$\frac{\frac{3\left(fx+e\right)c^2}{a^2}+\frac{2\left(a^4c^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3-3\,a^4c^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)\right)}{a^6}}{3\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/3*(3*(f*x + e)*c^2/a^2 + 2*(a^4*c^2*tan(1/2*f*x + 1/2*e)^3 - 3*a^4*c^2*ta
n(1/2*f*x + 1/2*e))/a^6)/f
```

maple [A] time = 0.86, size = 65, normalized size = 0.97

$$\frac{2c^2\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^2}-\frac{2c^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^2}+\frac{2c^2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^2,x)
```

```
[Out] 2/3/f*c^2/a^2*tan(1/2*e+1/2*f*x)^3-2/f*c^2/a^2*tan(1/2*e+1/2*f*x)+2/f*c^2/a
^2*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.43, size = 170, normalized size = 2.54

$$-\frac{c^2\left(\frac{\frac{9\sin(fx+e)}{\cos(fx+e)+1}-\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}}{a^2}-\frac{12\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{a^2}\right)-\frac{c^2\left(\frac{3\sin(fx+e)}{\cos(fx+e)+1}+\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}\right)}{a^2}+\frac{2c^2\left(\frac{3\sin(fx+e)}{\cos(fx+e)+1}-\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}\right)}{a^2}}{6f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] -1/6*(c^2*((9*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e
) + 1)^3)/a^2 - 12*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/a^2) - c^2*(3*si
n(f*x + e)/(cos(f*x + e) + 1) + sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2 +
2*c^2*(3*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e) + 1
)^3)/a^2)/f
```

mupad [B] time = 1.38, size = 38, normalized size = 0.57

$$\frac{2\,c^2\,\left({\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^3-3\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)+\frac{3\,f\,x}{2}\right)}{3\,a^2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^2,x)
```

```
[Out] (2*c^2*(tan(e/2 + (f*x)/2)^3 - 3*tan(e/2 + (f*x)/2) + (3*f*x)/2))/(3*a^2*f)
```

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

$$\frac{c^2\left(\int\left(-\frac{2\sec\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\right)dx+\int\frac{\sec^2\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx+\int\frac{1}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**2/(a+a*sec(f*x+e))**2,x)
```

```
[Out] c**2*(Integral(-2*sec(e + f*x)/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) +
 Integral(sec(e + f*x)**2/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + Inte
gral(1/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x))/a**2
```

3.25 $\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^2}\,dx$

Optimal. Leaf size=61

$$-\frac{5c\tan(e+fx)}{3a^2f(\sec(e+fx)+1)}-\frac{2c\tan(e+fx)}{3a^2f(\sec(e+fx)+1)^2}+\frac{cx}{a^2}$$

```
[Out] c*x/a^2-2/3*c*tan(f*x+e)/a^2/f/(1+sec(f*x+e))^2-5/3*c*tan(f*x+e)/a^2/f/(1+s
ec(f*x+e))
```

Rubi [A] time = 0.15, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {3903, 3777, 3919, 3794, 3796}

$$-\frac{5c\tan(e+fx)}{3a^2f(\sec(e+fx)+1)}-\frac{2c\tan(e+fx)}{3a^2f(\sec(e+fx)+1)^2}+\frac{cx}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (c*x)/a^2 - (2*c*Tan[e + f*x])/(3*a^2*f*(1 + Sec[e + f*x])^2) - (5*c*Tan[e
+ f*x])/(3*a^2*f*(1 + Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
```

```
a*d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^2}\,dx &= \frac{\int \left(\frac{c}{(1+\sec(e+fx))^2}-\frac{c\sec(e+fx)}{(1+\sec(e+fx))^2}\right)dx}{a^2}\\
&= \frac{c\int \frac{1}{(1+\sec(e+fx))^2}\,dx}{a^2}-\frac{c\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{a^2}\\
&= -\frac{2c\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}-\frac{c\int \frac{-3+\sec(e+fx)}{1+\sec(e+fx)}\,dx}{3a^2}-\frac{c\int \frac{\sec(e+fx)}{1+\sec(e+fx)}\,dx}{3a^2}\\
&= \frac{cx}{a^2}-\frac{2c\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}-\frac{c\tan(e+fx)}{3a^2f(1+\sec(e+fx))}-\frac{(4c)\int \frac{\sec(e+fx)}{1+\sec(e+fx)}\,dx}{3a^2}\\
&= \frac{cx}{a^2}-\frac{2c\tan(e+fx)}{3a^2f(1+\sec(e+fx))^2}-\frac{5c\tan(e+fx)}{3a^2f(1+\sec(e+fx))}
\end{aligned}
$$

Mathematica [A] time = 0.31, size = 113, normalized size = 1.85

$$
\frac{c\sec\left(\frac{e}{2}\right)\sec^3\left(\frac{1}{2}(e+fx)\right)\left(18\sin\left(e+\frac{fx}{2}\right)-14\sin\left(e+\frac{3fx}{2}\right)+9fx\cos\left(e+\frac{fx}{2}\right)+3fx\cos\left(e+\frac{3fx}{2}\right)+3fx\cos
}{24a^2f}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (c*Sec[e/2]*Sec[(e + f*x)/2]^3*(9*f*x*Cos[(f*x)/2] + 9*f*x*Cos[e + (f*x)/2]
 + 3*f*x*Cos[e + (3*f*x)/2] + 3*f*x*Cos[2*e + (3*f*x)/2] - 24*Sin[(f*x)/2]
+ 18*Sin[e + (f*x)/2] - 14*Sin[e + (3*f*x)/2]))/(24*a^2*f)
```

fricas [A] time = 0.47, size = 86, normalized size = 1.41

$$
\frac{3\,cfx\cos\left(fx+e\right)^2+6\,cfx\cos\left(fx+e\right)+3\,cfx-\left(7\,c\cos\left(fx+e\right)+5\,c\right)\sin\left(fx+e\right)}{3\left(a^2f\cos\left(fx+e\right)^2+2\,a^2f\cos\left(fx+e\right)+a^2f\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/3*(3*c*f*x*cos(f*x + e)^2 + 6*c*f*x*cos(f*x + e) + 3*c*f*x - (7*c*cos(f*x
 + e) + 5*c)*sin(f*x + e))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a
^2*f)
```

giac [A] time = 0.28, size = 56, normalized size = 0.92

$$
\frac{\frac{3\left(fx+e\right)c}{a^2}+\frac{a^4c\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3-6\,a^4c\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)}{a^6}}{3\,f}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/3*(3*(f*x + e)*c/a^2 + (a^4*c*tan(1/2*f*x + 1/2*e)^3 - 6*a^4*c*tan(1/2*f*
x + 1/2*e))/a^6)/f
```

maple [A] time = 0.90, size = 59, normalized size = 0.97

$$\frac{c\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^2}-\frac{2c\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^2}+\frac{2c\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^2,x)
```

```
[Out] 1/3/f*c/a^2*tan(1/2*e+1/2*f*x)^3-2/f*c/a^2*tan(1/2*e+1/2*f*x)+2/f*c/a^2*arc
tan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.42, size = 119, normalized size = 1.95

$$-\frac{c\left(\frac{\frac{9\sin(fx+e)}{\cos(fx+e)+1}-\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}}{a^2}-\frac{12\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{a^2}\right)+\frac{c\left(\frac{3\sin(fx+e)}{\cos(fx+e)+1}-\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}\right)}{a^2}}{6f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] -1/6*(c*((9*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e)
+ 1)^3)/a^2 - 12*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/a^2) + c*(3*sin(f*
x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e) + 1)^3)/a^2)/f
```

mupad [B] time = 1.34, size = 41, normalized size = 0.67

$$\frac{c\,x}{a^2}-\frac{c\left(6\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)-\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3\right)}{3\,a^2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^2,x)
```

```
[Out] (c*x)/a^2 - (c*(6*tan(e/2 + (f*x)/2) - tan(e/2 + (f*x)/2)^3))/(3*a^2*f)
```

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

$$-\frac{c\left(\int\frac{\sec\left(e+fx\right)}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{1}{\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)+1}\right)dx\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))**2,x)
```

```
[Out] -c*(Integral(sec(e + f*x)/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x) + Inte
gral(-1/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x))/a**2
```

3.26 $\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))}\,dx$

Optimal. Leaf size=69

$$-\frac{\cot^3(e+fx)(1-\sec(e+fx))}{3a^2cf}+\frac{\cot(e+fx)(3-2\sec(e+fx))}{3a^2cf}+\frac{x}{a^2c}$$

```
[Out] x/a^2/c+1/3*cot(f*x+e)*(3-2*sec(f*x+e))/a^2/c/f-1/3*cot(f*x+e)^3*(1-sec(f*x
+e))/a^2/c/f
```

Rubi [A] time = 0.11, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3904, 3882, 8}

$$-\frac{\cot^3(e+fx)(1-\sec(e+fx))}{3a^2cf}+\frac{\cot(e+fx)(3-2\sec(e+fx))}{3a^2cf}+\frac{x}{a^2c}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])),x]
```

```
[Out] x/(a^2*c) + (Cot[e + f*x]*(3 - 2*Sec[e + f*x]))/(3*a^2*c*f) - (Cot[e + f*x]
^3*(1 - Sec[e + f*x]))/(3*a^2*c*f)
```

Rule 8

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

Rule 3882

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[((e*Cot[c + d*x])^(m + 1)*(a + b*Csc[c + d*x]))/(d
*e*(m + 1)), x] - Dist[1/(e^2*(m + 1)), Int[(e*Cot[c + d*x])^(m + 2)*(a*(m
+ 1) + b*(m + 2)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && LtQ[
m, -1]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))}\,dx &= \frac{\int \cot^4(e+fx)(c-c\sec(e+fx))\,dx}{a^2c^2}\\
&= -\frac{\cot^3(e+fx)(1-\sec(e+fx))}{3a^2cf}+\frac{\int \cot^2(e+fx)(-3c+2c\sec(}{3a^2c^2}\\
&= \frac{\cot(e+fx)(3-2\sec(e+fx))}{3a^2cf}-\frac{\cot^3(e+fx)(1-\sec(e+fx))}{3a^2cf}\\
&= \frac{x}{a^2c}+\frac{\cot(e+fx)(3-2\sec(e+fx))}{3a^2cf}-\frac{\cot^3(e+fx)(1-\sec(e}{3a^2cf}
\end{aligned}$$

Mathematica [A] time = 0.55, size = 135, normalized size = 1.96

$$\frac{\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\csc\left(\frac{1}{2}(e+fx)\right)\sec^3\left(\frac{1}{2}(e+fx)\right)(10\sin(e+fx)+5\sin(2(e+fx))-6\sin(2e+fx)-8\sin(e+2f}{96a^2cf}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])),x]
```

```
[Out] (Csc[e/2]*Csc[(e + f*x)/2]*Sec[e/2]*Sec[(e + f*x)/2]^3*(6*f*x*Cos[f*x] - 6*
f*x*Cos[2*e + f*x] + 3*f*x*Cos[e + 2*f*x] - 3*f*x*Cos[3*e + 2*f*x] - 10*Sin
[f*x] + 10*Sin[e + f*x] + 5*Sin[2*(e + f*x)] - 6*Sin[2*e + f*x] - 8*Sin[e +
 2*f*x]))/(96*a^2*c*f)
```

fricas [A] time = 0.43, size = 70, normalized size = 1.01

$$\frac{4\cos\left(fx+e\right)^2+3\left(fx\cos\left(fx+e\right)+fx\right)\sin\left(fx+e\right)+\cos\left(fx+e\right)-2}{3\left(a^2cf\cos\left(fx+e\right)+a^2cf\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/3*(4*cos(f*x + e)^2 + 3*(f*x*cos(f*x + e) + f*x)*sin(f*x + e) + cos(f*x +
 e) - 2)/((a^2*c*f*cos(f*x + e) + a^2*c*f)*sin(f*x + e))
```

giac [A] time = 0.40, size = 85, normalized size = 1.23

$$\frac{\frac{12\left(fx+e\right)}{a^2c}+\frac{3}{a^2c\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}+\frac{a^4c^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3-12a^4c^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}{a^6c^3}}{12f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x, algorithm="giac")
```

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

maple [A] time = 0.84, size = 87, normalized size = 1.26

$$\frac{\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)}{12f\,a^2c}-\frac{\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^2c}+\frac{1}{4f\,a^2c\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x)
```

```
[Out] 1/12/f/a^2/c*tan(1/2*e+1/2*f*x)^3-1/f/a^2/c*tan(1/2*e+1/2*f*x)+1/4/f/a^2/c/
tan(1/2*e+1/2*f*x)+2/f/a^2/c*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.43, size = 102, normalized size = 1.48

$$-\frac{\frac{\frac{12\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}}{a^2c}-\frac{24\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^2c}-\frac{3\left(\cos\left(fx+e\right)+1\right)}{a^2c\sin\left(fx+e\right)}}{12f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -1/12*((12*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e) +
 1)^3)/(a^2*c) - 24*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/(a^2*c) - 3*(co
s(f*x + e) + 1)/(a^2*c*sin(f*x + e)))/f
```

mupad [B] time = 1.42, size = 69, normalized size = 1.00

$$\frac{x}{a^2\,c}+\frac{\frac{4\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4}{3}-\frac{7\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{6}+\frac{1}{12}}{a^2\,c\,f\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))),x)
```

```
[Out] x/(a^2*c) + ((4*cos(e/2 + (f*x)/2)^4)/3 - (7*cos(e/2 + (f*x)/2)^2)/6 + 1/12
)/(a^2*c*f*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2))
```

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

$$-\frac{\int \frac{1}{\sec^3\left(e+fx\right)+\sec^2\left(e+fx\right)-\sec\left(e+fx\right)-1}\,dx}{a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**2/(c-c*sec(f*x+e)),x)
```

```
[Out] -Integral(1/(sec(e + f*x)**3 + sec(e + f*x)**2 - sec(e + f*x) - 1), x)/(a**
2*c)
```

3.27 $\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=46

$$-\frac{\cot^3(e+fx)}{3a^2c^2f}+\frac{\cot(e+fx)}{a^2c^2f}+\frac{x}{a^2c^2}$$

```
[Out] x/a^2/c^2+cot(f*x+e)/a^2/c^2/f-1/3*cot(f*x+e)^3/a^2/c^2/f
```

Rubi [A] time = 0.07, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3904, 3473, 8}

$$-\frac{\cot^3(e+fx)}{3a^2c^2f}+\frac{\cot(e+fx)}{a^2c^2f}+\frac{x}{a^2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] x/(a^2*c^2) + Cot[e + f*x]/(a^2*c^2*f) - Cot[e + f*x]^3/(3*a^2*c^2*f)
```

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 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^2}\,dx &= \frac{\int \cot^4(e+fx)\,dx}{a^2c^2}\\ &= -\frac{\cot^3(e+fx)}{3a^2c^2f}-\frac{\int \cot^2(e+fx)\,dx}{a^2c^2}\\ &= \frac{\cot(e+fx)}{a^2c^2f}-\frac{\cot^3(e+fx)}{3a^2c^2f}+\frac{\int 1\,dx}{a^2c^2}\\ &= \frac{x}{a^2c^2}+\frac{\cot(e+fx)}{a^2c^2f}-\frac{\cot^3(e+fx)}{3a^2c^2f}\end{aligned}$$

Mathematica [C] time = 0.05, size = 39, normalized size = 0.85

$$-\frac{\cot^3(e+fx)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\tan^2(e+fx)\right)}{3a^2c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] -1/3*(Cot[e + f*x]^3*Hypergeometric2F1[-3/2, 1, -1/2, -Tan[e + f*x]^2])/(a^
2*c^2*f)
```

fricas [A] time = 0.41, size = 81, normalized size = 1.76

$$\frac{4 \cos\left(fx+e\right)^{3}+3 \left(fx \cos\left(fx+e\right)^{2}-fx\right) \sin\left(fx+e\right)-3 \cos\left(fx+e\right)}{3 \left(a^{2} c^{2} f \cos\left(fx+e\right)^{2}-a^{2} c^{2} f\right) \sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/3*(4*cos(f*x + e)^3 + 3*(f*x*cos(f*x + e)^2 - f*x)*sin(f*x + e) - 3*cos(f
*x + e))/((a^2*c^2*f*cos(f*x + e)^2 - a^2*c^2*f)*sin(f*x + e))
```

giac [B] time = 0.29, size = 100, normalized size = 2.17

$$\frac{\frac{24\left(fx+e\right)}{a^{2} c^{2}}+\frac{15 \tan\left(\frac{1}{2} fx+\frac{1}{2} e\right)^{2}-1}{a^{2} c^{2} \tan\left(\frac{1}{2} fx+\frac{1}{2} e\right)^{3}}+\frac{a^{4} c^{4} \tan\left(\frac{1}{2} fx+\frac{1}{2} e\right)^{3}-15 a^{4} c^{4} \tan\left(\frac{1}{2} fx+\frac{1}{2} e\right)}{a^{6} c^{6}}}{24 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/24*(24*(f*x + e)/(a^2*c^2) + (15*tan(1/2*f*x + 1/2*e)^2 - 1)/(a^2*c^2*tan
(1/2*f*x + 1/2*e)^3) + (a^4*c^4*tan(1/2*f*x + 1/2*e)^3 - 15*a^4*c^4*tan(1/2
*f*x + 1/2*e))/(a^6*c^6))/f
```

maple [F(-2)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+a \sec\left(fx+e\right)\right)^{2} \left(c-c \sec\left(fx+e\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x)
```

```
[Out] int(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x)
```

maxima [A] time = 0.42, size = 46, normalized size = 1.00

$$\frac{\frac{3\left(fx+e\right)}{a^{2} c^{2}}+\frac{3 \tan\left(fx+e\right)^{2}-1}{a^{2} c^{2} \tan\left(fx+e\right)^{3}}}{3 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/3*(3*(f*x + e)/(a^2*c^2) + (3*tan(f*x + e)^2 - 1)/(a^2*c^2*tan(f*x + e)^3
))/f
```

mupad [B] time = 1.47, size = 58, normalized size = 1.26

$$-\frac{\cos\left(3\,e+3\,f\,x\right)+\frac{3\,\sin\left(3\,e+3\,f\,x\right)\,\left(e+f\,x\right)}{4}-\frac{9\,\sin\left(e+f\,x\right)\,\left(e+f\,x\right)}{4}}{3\,a^2\,c^2\,f\,{\sin\left(e+f\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^2),x)
```

```
[Out] -(cos(3*e + 3*f*x) + (3*sin(3*e + 3*f*x)*(e + f*x))/4 - (9*sin(e + f*x)*(e
+ f*x))/4)/(3*a^2*c^2*f*sin(e + f*x)^3)
```

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

$$\frac{\int \frac{1}{\sec^4(e+fx)-2\sec^2(e+fx)+1}\,dx}{a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**2,x)
```

```
[Out] Integral(1/(sec(e + f*x)**4 - 2*sec(e + f*x)**2 + 1), x)/(a**2*c**2)
```

3.28 $\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=98

$$\frac{\cot^5(e+fx)(\sec(e+fx)+1)}{5a^2c^3f}-\frac{\cot^3(e+fx)(4\sec(e+fx)+5)}{15a^2c^3f}+\frac{\cot(e+fx)(8\sec(e+fx)+15)}{15a^2c^3f}+\frac{x}{a^2c^3}$$

```
[Out] x/a^2/c^3+1/5*cot(f*x+e)^5*(1+sec(f*x+e))/a^2/c^3/f-1/15*cot(f*x+e)^3*(5+4*
sec(f*x+e))/a^2/c^3/f+1/15*cot(f*x+e)*(15+8*sec(f*x+e))/a^2/c^3/f
```

Rubi [A] time = 0.14, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {3904, 3882, 8}

$$\frac{\cot^5(e+fx)(\sec(e+fx)+1)}{5a^2c^3f}-\frac{\cot^3(e+fx)(4\sec(e+fx)+5)}{15a^2c^3f}+\frac{\cot(e+fx)(8\sec(e+fx)+15)}{15a^2c^3f}+\frac{x}{a^2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^3),x]
```

```
[Out] x/(a^2*c^3) + (Cot[e + f*x]^5*(1 + Sec[e + f*x]))/(5*a^2*c^3*f) - (Cot[e +
f*x]^3*(5 + 4*Sec[e + f*x]))/(15*a^2*c^3*f) + (Cot[e + f*x]*(15 + 8*Sec[e +
 f*x]))/(15*a^2*c^3*f)
```

Rule 8

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

Rule 3882

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[((e*Cot[c + d*x])^(m + 1)*(a + b*Csc[c + d*x]))/(d
*e*(m + 1)), x] - Dist[1/(e^2*(m + 1)), Int[(e*Cot[c + d*x])^(m + 2)*(a*(m
+ 1) + b*(m + 2)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && LtQ[
m, -1]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^3}\,dx &= -\frac{\int \cot^6(e+fx)(a+a\sec(e+fx))\,dx}{a^3c^3}\\
&= \frac{\cot^5(e+fx)(1+\sec(e+fx))}{5a^2c^3f}-\frac{\int \cot^4(e+fx)(-5a-4a\sec(}{5a^3c^3}\\
&= \frac{\cot^5(e+fx)(1+\sec(e+fx))}{5a^2c^3f}-\frac{\cot^3(e+fx)(5+4\sec(e+fx}{15a^2c^3f}\\
&= \frac{\cot^5(e+fx)(1+\sec(e+fx))}{5a^2c^3f}-\frac{\cot^3(e+fx)(5+4\sec(e+fx}{15a^2c^3f}\\
&= \frac{x}{a^2c^3}+\frac{\cot^5(e+fx)(1+\sec(e+fx))}{5a^2c^3f}-\frac{\cot^3(e+fx)(5+4\sec}{15a^2c^3f}
\end{aligned}$$

Mathematica [B] time = 1.41, size = 257, normalized size = 2.62

$$\frac{\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\csc^5\left(\frac{1}{2}(e+fx)\right)\sec^3\left(\frac{1}{2}(e+fx)\right)(-534\sin(e+fx)+178\sin(2(e+fx))+178\sin(3(e+fx))-8\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^3),x]
```

```
[Out] (Csc[e/2]*Csc[(e + f*x)/2]^5*Sec[e/2]*Sec[(e + f*x)/2]^3*(360*f*x*Cos[f*x]
- 360*f*x*Cos[2*e + f*x] - 120*f*x*Cos[e + 2*f*x] + 120*f*x*Cos[3*e + 2*f*x
] - 120*f*x*Cos[2*e + 3*f*x] + 120*f*x*Cos[4*e + 3*f*x] + 60*f*x*Cos[3*e +
4*f*x] - 60*f*x*Cos[5*e + 4*f*x] + 200*Sin[e] - 584*Sin[f*x] - 534*Sin[e +
f*x] + 178*Sin[2*(e + f*x)] + 178*Sin[3*(e + f*x)] - 89*Sin[4*(e + f*x)] -
520*Sin[2*e + f*x] + 248*Sin[e + 2*f*x] + 120*Sin[3*e + 2*f*x] + 248*Sin[2*
e + 3*f*x] + 120*Sin[4*e + 3*f*x] - 184*Sin[3*e + 4*f*x]))/(30720*a^2*c^3*f
)
```

fricas [A] time = 0.42, size = 154, normalized size = 1.57

$$\frac{23\cos\left(fx+e\right)^4-8\cos\left(fx+e\right)^3-27\cos\left(fx+e\right)^2+15\left(fx\cos\left(fx+e\right)^3-fx\cos\left(fx+e\right)^2-fx\cos\left(fx+\cdots\right.\right.}{15\left(a^2c^3f\cos\left(fx+e\right)^3-a^2c^3f\cos\left(fx+e\right)^2-a^2c^3f\cos\left(fx+e\right)+a^2c^3f\right)\sin\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(23*cos(f*x + e)^4 - 8*cos(f*x + e)^3 - 27*cos(f*x + e)^2 + 15*(f*x*co
s(f*x + e)^3 - f*x*cos(f*x + e)^2 - f*x*cos(f*x + e) + f*x)*sin(f*x + e) +
7*cos(f*x + e) + 8)/((a^2*c^3*f*cos(f*x + e)^3 - a^2*c^3*f*cos(f*x + e)^2 -
 a^2*c^3*f*cos(f*x + e) + a^2*c^3*f)*sin(f*x + e))
```

giac [A] time = 0.43, size = 116, normalized size = 1.18

$$\frac{\frac{240\left(fx+e\right)}{a^2c^3}+\frac{3\left(80\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^4-10\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^2+1\right)}{a^2c^3\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5}+\frac{5\left(a^4c^6\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3-18a^4c^6\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)\right)}{a^6c^9}}{240f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] 1/240*(240*(f*x + e)/(a^2*c^3) + 3*(80*tan(1/2*f*x + 1/2*e)^4 - 10*tan(1/2*
f*x + 1/2*e)^2 + 1)/(a^2*c^3*tan(1/2*f*x + 1/2*e)^5) + 5*(a^4*c^6*tan(1/2*f
*x + 1/2*e)^3 - 18*a^4*c^6*tan(1/2*f*x + 1/2*e))/(a^6*c^9))/f
```

maple [A] time = 1.10, size = 130, normalized size = 1.33

$$\frac{\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)}{48f\,a^2c^3}-\frac{3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{8f\,a^2c^3}+\frac{1}{80f\,a^2c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}-\frac{1}{8f\,a^2c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{1}{f\,a^2c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2\arctan\left(\mathrm{t}\cdots\right.}{f\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/48/f/a^2/c^3*tan(1/2*e+1/2*f*x)^3-3/8/f/a^2/c^3*tan(1/2*e+1/2*f*x)+1/80/f
/a^2/c^3/tan(1/2*e+1/2*f*x)^5-1/8/f/a^2/c^3/tan(1/2*e+1/2*f*x)^3+1/f/a^2/c^
3/tan(1/2*e+1/2*f*x)+2/f/a^2/c^3*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.43, size = 147, normalized size = 1.50

$$-\frac{\frac{5\left(\frac{18\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{\sin\left(fx+e\right)^{3}}{\left(\cos\left(fx+e\right)+1\right)^{3}}\right)}{a^{2}c^{3}}-\frac{480\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^{2}c^{3}}+\frac{3\left(\frac{10\sin\left(fx+e\right)^{2}}{\left(\cos\left(fx+e\right)+1\right)^{2}}-\frac{80\sin\left(fx+e\right)^{4}}{\left(\cos\left(fx+e\right)+1\right)^{4}}-1\right)\left(\cos\left(fx+e\right)+1\right)^{5}}{a^{2}c^{3}\sin\left(fx+e\right)^{5}}}{240\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] -1/240*(5*(18*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x + e
) + 1)^3)/(a^2*c^3) - 480*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/(a^2*c^3)
 + 3*(10*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 - 80*sin(f*x + e)^4/(cos(f*x +
 e) + 1)^4 - 1)*(cos(f*x + e) + 1)^5/(a^2*c^3*sin(f*x + e)^5))/f
```

mupad [B] time = 1.54, size = 161, normalized size = 1.64

$$\frac{3\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^8+5\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^8-90\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6+240\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4-30\,\mathrm{co}}{240\,a^2\,c^3\,f\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^3),x)
```

```
[Out] (3*cos(e/2 + (f*x)/2)^8 + 5*sin(e/2 + (f*x)/2)^8 - 90*cos(e/2 + (f*x)/2)^2*
sin(e/2 + (f*x)/2)^6 + 240*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2)^4 - 30*c
os(e/2 + (f*x)/2)^6*sin(e/2 + (f*x)/2)^2 + 240*cos(e/2 + (f*x)/2)^3*sin(e/2
 + (f*x)/2)^5*(e + f*x))/(240*a^2*c^3*f*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x
)/2)^5)
```

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

$$-\frac{\int\frac{1}{\sec^5\left(e+fx\right)-\sec^4\left(e+fx\right)-2\sec^3\left(e+fx\right)+2\sec^2\left(e+fx\right)+\sec\left(e+fx\right)-1}\,dx}{a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**3,x)
```

```
[Out] -Integral(1/(sec(e + f*x)**5 - sec(e + f*x)**4 - 2*sec(e + f*x)**3 + 2*sec(
e + f*x)**2 + sec(e + f*x) - 1), x)/(a**2*c**3)
```

3.29 $\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^4}\,dx$

Optimal. Leaf size=166

$$-\frac{2\cot^7(e+fx)}{7a^2c^4f}+\frac{\cot^5(e+fx)}{5a^2c^4f}-\frac{\cot^3(e+fx)}{3a^2c^4f}+\frac{\cot(e+fx)}{a^2c^4f}-\frac{2\csc^7(e+fx)}{7a^2c^4f}+\frac{6\csc^5(e+fx)}{5a^2c^4f}-\frac{2\csc^3(e+fx)}{a^2c^4f}+\frac{2\csc$$

```
[Out] x/a^2/c^4+cot(f*x+e)/a^2/c^4/f-1/3*cot(f*x+e)^3/a^2/c^4/f+1/5*cot(f*x+e)^5/
a^2/c^4/f-2/7*cot(f*x+e)^7/a^2/c^4/f+2*csc(f*x+e)/a^2/c^4/f-2*csc(f*x+e)^3/
a^2/c^4/f+6/5*csc(f*x+e)^5/a^2/c^4/f-2/7*csc(f*x+e)^7/a^2/c^4/f
```

Rubi [A] time = 0.21, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {3904, 3886, 3473, 8, 2606, 194, 2607, 30}

$$-\frac{2\cot^7(e+fx)}{7a^2c^4f}+\frac{\cot^5(e+fx)}{5a^2c^4f}-\frac{\cot^3(e+fx)}{3a^2c^4f}+\frac{\cot(e+fx)}{a^2c^4f}-\frac{2\csc^7(e+fx)}{7a^2c^4f}+\frac{6\csc^5(e+fx)}{5a^2c^4f}-\frac{2\csc^3(e+fx)}{a^2c^4f}+\frac{2\csc$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^4),x]
```

```
[Out] x/(a^2*c^4) + Cot[e + f*x]/(a^2*c^4*f) - Cot[e + f*x]^3/(3*a^2*c^4*f) + Cot
[e + f*x]^5/(5*a^2*c^4*f) - (2*Cot[e + f*x]^7)/(7*a^2*c^4*f) + (2*Csc[e + f
*x])/(a^2*c^4*f) - (2*Csc[e + f*x]^3)/(a^2*c^4*f) + (6*Csc[e + f*x]^5)/(5*a
^2*c^4*f) - (2*Csc[e + f*x]^7)/(7*a^2*c^4*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && 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])
```

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])
```

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 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^4}\,dx &= \frac{\int \cot^8(e+fx)(a+a\sec(e+fx))^2\,dx}{a^4c^4}\\
&= \frac{\int \left(a^2\cot^8(e+fx)+2a^2\cot^7(e+fx)\csc(e+fx)+a^2\cot^6(e\right.}{a^4c^4}\\
&= \frac{\int \cot^8(e+fx)\,dx}{a^2c^4}+\frac{\int \cot^6(e+fx)\csc^2(e+fx)\,dx}{a^2c^4}+\frac{2\int \cot}{}\\
&= -\frac{\cot^7(e+fx)}{7a^2c^4f}-\frac{\int \cot^6(e+fx)\,dx}{a^2c^4}+\frac{\mathrm{Subst}\left(\int x^6\,dx,x,-\cot\right.}{a^2c^4f}\\
&= \frac{\cot^5(e+fx)}{5a^2c^4f}-\frac{2\cot^7(e+fx)}{7a^2c^4f}+\frac{\int \cot^4(e+fx)\,dx}{a^2c^4}-\frac{2\,\mathrm{Subst}}{}\\
&= -\frac{\cot^3(e+fx)}{3a^2c^4f}+\frac{\cot^5(e+fx)}{5a^2c^4f}-\frac{2\cot^7(e+fx)}{7a^2c^4f}+\frac{2\csc(e+f}{a^2c^4f}\\
&= \frac{\cot(e+fx)}{a^2c^4f}-\frac{\cot^3(e+fx)}{3a^2c^4f}+\frac{\cot^5(e+fx)}{5a^2c^4f}-\frac{2\cot^7(e+fx)}{7a^2c^4f}+\\
&= \frac{x}{a^2c^4}+\frac{\cot(e+fx)}{a^2c^4f}-\frac{\cot^3(e+fx)}{3a^2c^4f}+\frac{\cot^5(e+fx)}{5a^2c^4f}-\frac{2\cot^7(e}{7a^2c}
\end{aligned}
$$

Mathematica [A] time = 1.27, size = 315, normalized size = 1.90

$$\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\csc^7\left(\frac{1}{2}(e+fx)\right)\sec^3\left(\frac{1}{2}(e+fx)\right)(-16002\sin(e+fx)+9144\sin(2(e+fx))+3429\sin(3(e+$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^4),x]
```

```
[Out] (Csc[e/2]*Csc[(e + f*x)/2]^7*Sec[e/2]*Sec[(e + f*x)/2]^3*(5880*f*x*Cos[f*x]
 - 5880*f*x*Cos[2*e + f*x] - 3360*f*x*Cos[e + 2*f*x] + 3360*f*x*Cos[3*e + 2
*f*x] - 1260*f*x*Cos[2*e + 3*f*x] + 1260*f*x*Cos[4*e + 3*f*x] + 1680*f*x*Co
s[3*e + 4*f*x] - 1680*f*x*Cos[5*e + 4*f*x] - 420*f*x*Cos[4*e + 5*f*x] + 420
*f*x*Cos[6*e + 5*f*x] + 4032*Sin[e] - 9632*Sin[f*x] - 16002*Sin[e + f*x] +
9144*Sin[2*(e + f*x)] + 3429*Sin[3*(e + f*x)] - 4572*Sin[4*(e + f*x)] + 114
3*Sin[5*(e + f*x)] - 11760*Sin[2*e + f*x] + 8864*Sin[e + 2*f*x] + 3360*Sin[
3*e + 2*f*x] + 2064*Sin[2*e + 3*f*x] + 2520*Sin[4*e + 3*f*x] - 4432*Sin[3*e
```

```
 + 4*f*x] - 1680*Sin[5*e + 4*f*x] + 1528*Sin[4*e + 5*f*x]))/(860160*a^2*c^4
*f)
```

fricas [A] time = 0.49, size = 166, normalized size = 1.00

$$\frac{191\cos\left(fx+e\right)^{5}-172\cos\left(fx+e\right)^{4}-253\cos\left(fx+e\right)^{3}+258\cos\left(fx+e\right)^{2}+105\left(fx\cos\left(fx+e\right)^{4}-2\,fx\cos\ldots\right.}{105\left(a^{2}c^{4}f\cos\left(fx+e\right)^{4}-2\,a^{2}c^{4}f\cos\left(fx+e\right)^{3}+2\,a^{2}c^{4}f\cos\left(f\ldots\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] 1/105*(191*cos(f*x + e)^5 - 172*cos(f*x + e)^4 - 253*cos(f*x + e)^3 + 258*c
os(f*x + e)^2 + 105*(f*x*cos(f*x + e)^4 - 2*f*x*cos(f*x + e)^3 + 2*f*x*cos(
f*x + e) - f*x)*sin(f*x + e) + 87*cos(f*x + e) - 96)/((a^2*c^4*f*cos(f*x +
e)^4 - 2*a^2*c^4*f*cos(f*x + e)^3 + 2*a^2*c^4*f*cos(f*x + e) - a^2*c^4*f)*s
in(f*x + e))
```

giac [A] time = 0.95, size = 129, normalized size = 0.78

$$\frac{\frac{3360\left(fx+e\right)}{a^{2}c^{4}}+\frac{4410\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{6}-770\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{4}+147\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{2}-15}{a^{2}c^{4}\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{7}}+\frac{35\left(a^{4}c^{8}\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^{3}-21\,a^{4}c^{8}\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)\right)}{a^{6}c^{12}}}{3360\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] 1/3360*(3360*(f*x + e)/(a^2*c^4) + (4410*tan(1/2*f*x + 1/2*e)^6 - 770*tan(1
/2*f*x + 1/2*e)^4 + 147*tan(1/2*f*x + 1/2*e)^2 - 15)/(a^2*c^4*tan(1/2*f*x +
 1/2*e)^7) + 35*(a^4*c^8*tan(1/2*f*x + 1/2*e)^3 - 21*a^4*c^8*tan(1/2*f*x +
1/2*e))/(a^6*c^12))/f
```

maple [A] time = 0.95, size = 153, normalized size = 0.92

$$\frac{\tan^{3}\left(\frac{e}{2}+\frac{fx}{2}\right)}{96f\,a^{2}c^{4}}-\frac{7\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{32f\,a^{2}c^{4}}-\frac{1}{224f\,a^{2}c^{4}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{7}}+\frac{7}{160f\,a^{2}c^{4}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{5}}-\frac{11}{48f\,a^{2}c^{4}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{3}}+\frac{\ldots}{16f\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x)
```

```
[Out] 1/96/f/a^2/c^4*tan(1/2*e+1/2*f*x)^3-7/32/f/a^2/c^4*tan(1/2*e+1/2*f*x)-1/224
/f/a^2/c^4/tan(1/2*e+1/2*f*x)^7+7/160/f/a^2/c^4/tan(1/2*e+1/2*f*x)^5-11/48/
f/a^2/c^4/tan(1/2*e+1/2*f*x)^3+21/16/f/a^2/c^4/tan(1/2*e+1/2*f*x)+2/f/a^2/c
^4*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.43, size = 167, normalized size = 1.01

$$-\frac{\frac{35\left(\frac{21\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{\sin\left(fx+e\right)^{3}}{\left(\cos\left(fx+e\right)+1\right)^{3}}\right)}{a^{2}c^{4}}-\frac{6720\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^{2}c^{4}}-\frac{\left(\frac{147\sin\left(fx+e\right)^{2}}{\left(\cos\left(fx+e\right)+1\right)^{2}}-\frac{770\sin\left(fx+e\right)^{4}}{\left(\cos\left(fx+e\right)+1\right)^{4}}+\frac{4410\sin\left(fx+e\right)^{6}}{\left(\cos\left(fx+e\right)+1\right)^{6}}-15\right)\left(\cos\left(fx+e\right)+1\right)^{7}}{a^{2}c^{4}\sin\left(fx+e\right)^{7}}}{3360\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] -1/3360*(35*(21*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x +
 e) + 1)^3)/(a^2*c^4) - 6720*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/(a^2*c
^4) - (147*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 - 770*sin(f*x + e)^4/(cos(f*
x + e) + 1)^4 + 4410*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 15)*(cos(f*x + e
) + 1)^7/(a^2*c^4*sin(f*x + e)^7))/f
```

mupad [B] time = 1.64, size = 185, normalized size = 1.11

$$\frac{35\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{10}-15\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{10}-735\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{2}\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{8}+4410\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{4}\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{6}}{3360\,a^2\,c^4\,f\cos\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^4),x)
```

```
[Out] (35*sin(e/2 + (f*x)/2)^10 - 15*cos(e/2 + (f*x)/2)^10 - 735*cos(e/2 + (f*x)/
2)^2*sin(e/2 + (f*x)/2)^8 + 4410*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2)^6
- 770*cos(e/2 + (f*x)/2)^6*sin(e/2 + (f*x)/2)^4 + 147*cos(e/2 + (f*x)/2)^8*
sin(e/2 + (f*x)/2)^2 + 3360*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)^7*(e +
f*x))/(3360*a^2*c^4*f*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)^7)
```

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

$$\frac{\int \frac{1}{\sec^{6}{\left(e+fx\right)}-2\sec^{5}{\left(e+fx\right)}-\sec^{4}{\left(e+fx\right)}+4\sec^{3}{\left(e+fx\right)}-\sec^{2}{\left(e+fx\right)}-2\sec{\left(e+fx\right)}+1}\,dx}{a^{2}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**4,x)
```

```
[Out] Integral(1/(sec(e + f*x)**6 - 2*sec(e + f*x)**5 - sec(e + f*x)**4 + 4*sec(e
 + f*x)**3 - sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x)/(a**2*c**4)
```

3.30 $\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^5}\,dx$

Optimal. Leaf size=210

$$\frac{4\cot^9(e+fx)}{9a^2c^5f}-\frac{\cot^7(e+fx)}{7a^2c^5f}+\frac{\cot^5(e+fx)}{5a^2c^5f}-\frac{\cot^3(e+fx)}{3a^2c^5f}+\frac{\cot(e+fx)}{a^2c^5f}+\frac{4\csc^9(e+fx)}{9a^2c^5f}-\frac{15\csc^7(e+fx)}{7a^2c^5f}+\frac{21\csc^5}{5a}$$

```
[Out] x/a^2/c^5+cot(f*x+e)/a^2/c^5/f-1/3*cot(f*x+e)^3/a^2/c^5/f+1/5*cot(f*x+e)^5/
a^2/c^5/f-1/7*cot(f*x+e)^7/a^2/c^5/f+4/9*cot(f*x+e)^9/a^2/c^5/f+3*csc(f*x+e
)/a^2/c^5/f-13/3*csc(f*x+e)^3/a^2/c^5/f+21/5*csc(f*x+e)^5/a^2/c^5/f-15/7*cs
c(f*x+e)^7/a^2/c^5/f+4/9*csc(f*x+e)^9/a^2/c^5/f
```

Rubi [A] time = 0.29, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3904, 3886, 3473, 8, 2606, 194, 2607, 30, 270}

$$\frac{4\cot^9(e+fx)}{9a^2c^5f}-\frac{\cot^7(e+fx)}{7a^2c^5f}+\frac{\cot^5(e+fx)}{5a^2c^5f}-\frac{\cot^3(e+fx)}{3a^2c^5f}+\frac{\cot(e+fx)}{a^2c^5f}+\frac{4\csc^9(e+fx)}{9a^2c^5f}-\frac{15\csc^7(e+fx)}{7a^2c^5f}+\frac{21\csc^5}{5a}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^5),x]
```

```
[Out] x/(a^2*c^5) + Cot[e + f*x]/(a^2*c^5*f) - Cot[e + f*x]^3/(3*a^2*c^5*f) + Cot
[e + f*x]^5/(5*a^2*c^5*f) - Cot[e + f*x]^7/(7*a^2*c^5*f) + (4*Cot[e + f*x]^
9)/(9*a^2*c^5*f) + (3*Csc[e + f*x])/(a^2*c^5*f) - (13*Csc[e + f*x]^3)/(3*a^
2*c^5*f) + (21*Csc[e + f*x]^5)/(5*a^2*c^5*f) - (15*Csc[e + f*x]^7)/(7*a^2*c
^5*f) + (4*Csc[e + f*x]^9)/(9*a^2*c^5*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

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])
```

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])
```

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 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^2(c-c\sec(e+fx))^5}\,dx = -\frac{\int \cot^{10}(e+fx)(a+a\sec(e+fx))^3\,dx}{a^5c^5}$$
$$= -\frac{\int \left(a^3\cot^{10}(e+fx)+3a^3\cot^9(e+fx)\csc(e+fx)+3a^3\cot\right.}{a^5c^5}$$
$$= -\frac{\int \cot^{10}(e+fx)\,dx}{a^2c^5} - \frac{\int \cot^7(e+fx)\csc^3(e+fx)\,dx}{a^2c^5} - \frac{3\int c}{}$$
$$= \frac{\cot^9(e+fx)}{9a^2c^5f} + \frac{\int \cot^8(e+fx)\,dx}{a^2c^5} + \frac{\mathrm{Subst}\left(\int x^2\left(-1+x^2\right)^3 d\right.}{a^2c^5f}$$
$$= -\frac{\cot^7(e+fx)}{7a^2c^5f} + \frac{4\cot^9(e+fx)}{9a^2c^5f} - \frac{\int \cot^6(e+fx)\,dx}{a^2c^5} + \frac{\mathrm{Subst}}{}$$
$$= \frac{\cot^5(e+fx)}{5a^2c^5f} - \frac{\cot^7(e+fx)}{7a^2c^5f} + \frac{4\cot^9(e+fx)}{9a^2c^5f} + \frac{3\csc(e+fx)}{a^2c^5f}$$
$$= -\frac{\cot^3(e+fx)}{3a^2c^5f} + \frac{\cot^5(e+fx)}{5a^2c^5f} - \frac{\cot^7(e+fx)}{7a^2c^5f} + \frac{4\cot^9(e+fx}{9a^2c^5f}$$
$$= \frac{\cot(e+fx)}{a^2c^5f} - \frac{\cot^3(e+fx)}{3a^2c^5f} + \frac{\cot^5(e+fx)}{5a^2c^5f} - \frac{\cot^7(e+fx)}{7a^2c^5f} +$$
$$= \frac{x}{a^2c^5} + \frac{\cot(e+fx)}{a^2c^5f} - \frac{\cot^3(e+fx)}{3a^2c^5f} + \frac{\cot^5(e+fx)}{5a^2c^5f} - \frac{\cot^7(e+}{7a^2c^5}$$

Mathematica [A] time = 1.20, size = 383, normalized size = 1.82

$$\frac{\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\tan(e+fx)\sec^6(e+fx)(-675036\sin(e+fx)+506277\sin(2(e+fx))+37502\sin(3(e+fx))}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^5),x]
```

```
[Out] (Csc[e/2]*Sec[e/2]*Sec[e + f*x]^6*(181440*f*x*Cos[f*x] - 181440*f*x*Cos[2*e
 + f*x] - 136080*f*x*Cos[e + 2*f*x] + 136080*f*x*Cos[3*e + 2*f*x] - 10080*f
*x*Cos[2*e + 3*f*x] + 10080*f*x*Cos[4*e + 3*f*x] + 60480*f*x*Cos[3*e + 4*f*
x] - 60480*f*x*Cos[5*e + 4*f*x] - 30240*f*x*Cos[4*e + 5*f*x] + 30240*f*x*Co
s[6*e + 5*f*x] + 5040*f*x*Cos[5*e + 6*f*x] - 5040*f*x*Cos[7*e + 6*f*x] + 16
9344*Sin[e] - 338112*Sin[f*x] - 675036*Sin[e + f*x] + 506277*Sin[2*(e + f*x
)] + 37502*Sin[3*(e + f*x)] - 225012*Sin[4*(e + f*x)] + 112506*Sin[5*(e + f
*x)] - 18751*Sin[6*(e + f*x)] - 431424*Sin[2*e + f*x] + 375552*Sin[e + 2*f*
x] + 201600*Sin[3*e + 2*f*x] - 41248*Sin[2*e + 3*f*x] + 84000*Sin[4*e + 3*f
*x] - 155712*Sin[3*e + 4*f*x] - 100800*Sin[5*e + 4*f*x] + 98016*Sin[4*e + 5
*f*x] + 30240*Sin[6*e + 5*f*x] - 21376*Sin[5*e + 6*f*x])*Tan[e + f*x])/(645
120*a^2*c^5*f*(-1 + Sec[e + f*x])^5*(1 + Sec[e + f*x])^2)
```

fricas [A] time = 0.42, size = 232, normalized size = 1.10

$$\frac{668\cos\left(fx+e\right)^{6} - 1059\cos\left(fx+e\right)^{5} - 573\cos\left(fx+e\right)^{4} + 1813\cos\left(fx+e\right)^{3} - 393\cos\left(fx+e\right)^{2} + 315\left(fx \cdots\right.}{315\left(a^{2}c^{5}f\cos\left(fx+e\right)^{5} - 3\,a^{2}c^{5}f\cos\left(fx+e\right)^{4} + 2\,a^{2}c \cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] 1/315*(668*cos(f*x + e)^6 - 1059*cos(f*x + e)^5 - 573*cos(f*x + e)^4 + 1813
*cos(f*x + e)^3 - 393*cos(f*x + e)^2 + 315*(f*x*cos(f*x + e)^5 - 3*f*x*cos(
f*x + e)^4 + 2*f*x*cos(f*x + e)^3 + 2*f*x*cos(f*x + e)^2 - 3*f*x*cos(f*x +
e) + f*x)*sin(f*x + e) - 789*cos(f*x + e) + 368)/((a^2*c^5*f*cos(f*x + e)^5
 - 3*a^2*c^5*f*cos(f*x + e)^4 + 2*a^2*c^5*f*cos(f*x + e)^3 + 2*a^2*c^5*f*co
s(f*x + e)^2 - 3*a^2*c^5*f*cos(f*x + e) + a^2*c^5*f)*sin(f*x + e))
```

giac [A] time = 0.48, size = 143, normalized size = 0.68

$$\frac{\frac{20160\left(fx+e\right)}{a^{2}c^{5}} + \frac{31185\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{8} - 6720\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{6} + 1827\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{4} - 360\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{2} + 35}{a^{2}c^{5}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{9}} + \frac{105\left(a^{4}c^{10}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{3} - 24\,a \cdots\right.}{a^{6}c^{15}}}{20160\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x, algorithm="giac")
```

```
[Out] 1/20160*(20160*(f*x + e)/(a^2*c^5) + (31185*tan(1/2*f*x + 1/2*e)^8 - 6720*t
an(1/2*f*x + 1/2*e)^6 + 1827*tan(1/2*f*x + 1/2*e)^4 - 360*tan(1/2*f*x + 1/2
*e)^2 + 35)/(a^2*c^5*tan(1/2*f*x + 1/2*e)^9) + 105*(a^4*c^10*tan(1/2*f*x +
1/2*e)^3 - 24*a^4*c^10*tan(1/2*f*x + 1/2*e))/(a^6*c^15))/f
```

maple [A] time = 0.94, size = 175, normalized size = 0.83

$$\frac{\tan^{3}\left(\frac{e}{2}+\frac{fx}{2}\right)}{192 f\,a^{2}c^{5}} - \frac{\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{8 f\,a^{2}c^{5}} + \frac{1}{576 f\,a^{2}c^{5}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{9}} - \frac{1}{56 f\,a^{2}c^{5}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{7}} + \frac{29}{320 f\,a^{2}c^{5}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{5}} - \frac{\cdots}{3 f\,a^{2} \cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x)
```

```
[Out] 1/192/f/a^2/c^5*tan(1/2*e+1/2*f*x)^3-1/8/f/a^2/c^5*tan(1/2*e+1/2*f*x)+1/576
/f/a^2/c^5/tan(1/2*e+1/2*f*x)^9-1/56/f/a^2/c^5/tan(1/2*e+1/2*f*x)^7+29/320/
f/a^2/c^5/tan(1/2*e+1/2*f*x)^5-1/3/f/a^2/c^5/tan(1/2*e+1/2*f*x)^3+99/64/f/a
^2/c^5/tan(1/2*e+1/2*f*x)+2/f/a^2/c^5*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.43, size = 186, normalized size = 0.89

$$-\frac{\frac{105\left(\frac{24\sin(fx+e)}{\cos(fx+e)+1}-\frac{\sin(fx+e)^3}{(\cos(fx+e)+1)^3}\right)}{a^2c^5}-\frac{40320\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{a^2c^5}+\frac{\left(\frac{360\sin(fx+e)^2}{(\cos(fx+e)+1)^2}-\frac{1827\sin(fx+e)^4}{(\cos(fx+e)+1)^4}+\frac{6720\sin(fx+e)^6}{(\cos(fx+e)+1)^6}-\frac{31185\sin(fx+e)^8}{(\cos(fx+e)+1)^8}-35\right)(\cos}{a^2c^5\sin(fx+e)^9}}{20160\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^2/(c-c*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] -1/20160*(105*(24*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^3/(cos(f*x
 + e) + 1)^3)/(a^2*c^5) - 40320*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/(a^
2*c^5) + (360*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 - 1827*sin(f*x + e)^4/(co
s(f*x + e) + 1)^4 + 6720*sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 31185*sin(f*
x + e)^8/(cos(f*x + e) + 1)^8 - 35)*(cos(f*x + e) + 1)^9/(a^2*c^5*sin(f*x +
 e)^9))/f
```

mupad [B] time = 1.78, size = 209, normalized size = 1.00

$$35\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{12}+105\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{12}-2520\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{2}\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{10}+31185\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^{4}\sin\left(\frac{e}{2}+\frac{f}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^5),x)
```

```
[Out] (35*cos(e/2 + (f*x)/2)^12 + 105*sin(e/2 + (f*x)/2)^12 - 2520*cos(e/2 + (f*x
)/2)^2*sin(e/2 + (f*x)/2)^10 + 31185*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2
)^8 - 6720*cos(e/2 + (f*x)/2)^6*sin(e/2 + (f*x)/2)^6 + 1827*cos(e/2 + (f*x)
/2)^8*sin(e/2 + (f*x)/2)^4 - 360*cos(e/2 + (f*x)/2)^10*sin(e/2 + (f*x)/2)^2
 + 20160*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)^9*(e + f*x))/(20160*a^2*c^
5*f*cos(e/2 + (f*x)/2)^3*sin(e/2 + (f*x)/2)^9)
```

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

$$-\frac{\int \frac{1}{\sec^7(e+fx)-3\sec^6(e+fx)+\sec^5(e+fx)+5\sec^4(e+fx)-5\sec^3(e+fx)-\sec^2(e+fx)+3\sec(e+fx)-1}\,dx}{a^2c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**2/(c-c*sec(f*x+e))**5,x)
```

```
[Out] -Integral(1/(sec(e + f*x)**7 - 3*sec(e + f*x)**6 + sec(e + f*x)**5 + 5*sec(
e + f*x)**4 - 5*sec(e + f*x)**3 - sec(e + f*x)**2 + 3*sec(e + f*x) - 1), x)
/(a**2*c**5)
```

3.31 $\int \frac{(c-c\sec(e+fx))^5}{(a+a\sec(e+fx))^3}\,dx$

Optimal. Leaf size=162

$$-\frac{c^5\tan(e+fx)}{a^3f}+\frac{128c^5\cot^5(e+fx)}{5a^3f}+\frac{128c^5\cot^3(e+fx)}{3a^3f}+\frac{32c^5\cot(e+fx)}{a^3f}-\frac{128c^5\csc^5(e+fx)}{5a^3f}+\frac{64c^5\csc^3(e+f}{3a^3f}$$

```
[Out] c^5*x/a^3+8*c^5*arctanh(sin(f*x+e))/a^3/f+32*c^5*cot(f*x+e)/a^3/f+128/3*c^5
*cot(f*x+e)^3/a^3/f+128/5*c^5*cot(f*x+e)^5/a^3/f-16*c^5*csc(f*x+e)/a^3/f+64
/3*c^5*csc(f*x+e)^3/a^3/f-128/5*c^5*csc(f*x+e)^5/a^3/f-c^5*tan(f*x+e)/a^3/f
```

Rubi [A] time = 0.44, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 15, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.577, Rules used = {3904, 3886, 3473, 8, 2606, 194, 2607, 30, 14, 3767, 2621, 302, 207, 2620, 270}

$$-\frac{c^5\tan(e+fx)}{a^3f}+\frac{128c^5\cot^5(e+fx)}{5a^3f}+\frac{128c^5\cot^3(e+fx)}{3a^3f}+\frac{32c^5\cot(e+fx)}{a^3f}-\frac{128c^5\csc^5(e+fx)}{5a^3f}+\frac{64c^5\csc^3(e+f}{3a^3f}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^5/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c^5*x)/a^3 + (8*c^5*ArcTanh[Sin[e + f*x]])/(a^3*f) + (32*c^5*Cot[e + f*x])
/(a^3*f) + (128*c^5*Cot[e + f*x]^3)/(3*a^3*f) + (128*c^5*Cot[e + f*x]^5)/(5
*a^3*f) - (16*c^5*Csc[e + f*x])/(a^3*f) + (64*c^5*Csc[e + f*x]^3)/(3*a^3*f)
 - (128*c^5*Csc[e + f*x]^5)/(5*a^3*f) - (c^5*Tan[e + f*x])/(a^3*f)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, 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 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 207

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

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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 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])
```

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])
```

Rule 2620

```
Int[csc[(e_.) + (f_.)*(x_)]^(m_.)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_Symbol]
:> Dist[1/f, Subst[Int[(1 + x^2)^((m + n)/2 - 1)/x^m, x], x, Tan[e + f*x]],
 x] /; FreeQ[{e, f}, x] && IntegersQ[m, n, (m + n)/2]
```

Rule 2621

```
Int[(csc[(e_.) + (f_.)*(x_)]*(a_.))^(m_)*sec[(e_.) + (f_.)*(x_)]^(n_.), x_S
ymbol] :> -Dist[(f*a^n)^(-1), Subst[Int[x^(m + n - 1)/(-1 + x^2/a^2)^((n +
1)/2), x], x, a*Csc[e + f*x]], x] /; FreeQ[{a, e, f, m}, x] && IntegerQ[(n
+ 1)/2] &&  !(IntegerQ[(m + 1)/2] && LtQ[0, m, n])
```

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 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^5}{(a+a\sec(e+fx))^3}\,dx = -\frac{\int \cot^6(e+fx)(c-c\sec(e+fx))^8\,dx}{a^3c^3}$$

$$= -\frac{\int \left(c^8\cot^6(e+fx) - 8c^8\cot^5(e+fx)\csc(e+fx) + 28c^8\cot^4(e+fx)\csc^2(e+fx)\right.}{}$$

$$= -\frac{c^5\int \cot^6(e+fx)\,dx}{a^3} - \frac{c^5\int \csc^6(e+fx)\sec^2(e+fx)\,dx}{a^3} + \frac{\left(8c^5\right)\int \cot^5(e+fx)\csc}{a^3}$$

$$= \frac{c^5\cot^5(e+fx)}{5a^3f} + \frac{c^5\int \cot^4(e+fx)\,dx}{a^3} - \frac{c^5\,\text{Subst}\left(\int \frac{\left(1+x^2\right)^3}{x^6}\,dx, x, \tan(e+fx)\right)}{a^3f} - \frac{(8}{}$$

$$= \frac{28c^5\cot(e+fx)}{a^3f} + \frac{55c^5\cot^3(e+fx)}{3a^3f} + \frac{57c^5\cot^5(e+fx)}{5a^3f} - \frac{56c^5\csc^5(e+fx)}{5a^3f} - \frac{c^5}{}$$

$$= \frac{32c^5\cot(e+fx)}{a^3f} + \frac{128c^5\cot^3(e+fx)}{3a^3f} + \frac{128c^5\cot^5(e+fx)}{5a^3f} - \frac{16c^5\csc(e+fx)}{a^3f} + \frac{6}{}$$

$$= \frac{c^5x}{a^3} + \frac{8c^5\tanh^{-1}(\sin(e+fx))}{a^3f} + \frac{32c^5\cot(e+fx)}{a^3f} + \frac{128c^5\cot^3(e+fx)}{3a^3f} + \frac{128c^5\text{co}}{5a}$$

Mathematica [B] time = 5.88, size = 557, normalized size = 3.44

$$-\frac{c^5\sec\left(\frac{e}{2}\right)(\cos(e+fx)-1)^5\cot\left(\frac{1}{2}(e+fx)\right)\csc^4\left(\frac{1}{2}(e+fx)\right)\left(1016\sin\left(\frac{fx}{2}\right)\cot^6\left(\frac{1}{2}(e+fx)\right)\csc\left(\frac{1}{2}(e+fx)\right)+\text{s}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^5/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] -1/240*(c^5*(-1 + Cos[e + f*x])^5*Cot[(e + f*x)/2]*Csc[(e + f*x)/2]^4*Sec[e
/2]*(-60*Cos[e]*Cot[(e + f*x)/2]^7*(f*x - 8*Log[Cos[(e + f*x)/2] - Sin[(e +
 f*x)/2]] + 8*Log[Cos[(e + f*x)/2] + Sin[(e + f*x)/2]])*Sec[e/2] + 48*Cot[(
e + f*x)/2]*Csc[(e + f*x)/2]^4*Sec[e/2]^2*(Sin[e/2] - Sin[(3*e)/2]) + 8*(-7
 + Cos[e + f*x])*Cot[(e + f*x)/2]^3*Csc[(e + f*x)/2]^4*Sec[e/2]^2*(Sin[e/2]
 - Sin[(3*e)/2]) + 1016*Cot[(e + f*x)/2]^6*Csc[(e + f*x)/2]*Sin[(f*x)/2] +
(-140 + 76*Cos[e] + 131*Cos[f*x] - 210*Cos[e + f*x] - 84*Cos[2*(e + f*x)] -
 14*Cos[3*(e + f*x)] + 131*Cos[2*e + f*x] + 66*Cos[e + 2*f*x] + 66*Cos[3*e
+ 2*f*x] + 21*Cos[2*e + 3*f*x] + 21*Cos[4*e + 3*f*x])*Csc[(e + f*x)/2]^7*Se
c[e/2]^2*Sin[(f*x)/2] + 2*Cot[(e + f*x)/2]^5*Sec[e/2]*(30*Cos[e]*(f*x - 8*L
og[Cos[(e + f*x)/2] - Sin[(e + f*x)/2]] + 8*Log[Cos[(e + f*x)/2] + Sin[(e +
 f*x)/2]]) - (Cos[e] + 15*(-1 + Cos[f*x] + Cos[e + f*x]))*Csc[(e + f*x)/2]^
2*Tan[e/2])))/(a^3*f*(1 + Cos[e + f*x])^3*(-1 + Cot[(e + f*x)/2])*(1 + Cot[
(e + f*x)/2])*(-1 + Tan[e/2])*(1 + Tan[e/2]))
```

fricas [A] time = 0.45, size = 289, normalized size = 1.78

$$\frac{15\,c^5fx\cos\left(fx+e\right)^4 + 45\,c^5fx\cos\left(fx+e\right)^3 + 45\,c^5fx\cos\left(fx+e\right)^2 + 15\,c^5fx\cos\left(fx+e\right) + 60\left(c^5\cos\left(fx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(15*c^5*f*x*cos(f*x + e)^4 + 45*c^5*f*x*cos(f*x + e)^3 + 45*c^5*f*x*co
s(f*x + e)^2 + 15*c^5*f*x*cos(f*x + e) + 60*(c^5*cos(f*x + e)^4 + 3*c^5*cos
(f*x + e)^3 + 3*c^5*cos(f*x + e)^2 + c^5*cos(f*x + e))*log(sin(f*x + e) + 1
) - 60*(c^5*cos(f*x + e)^4 + 3*c^5*cos(f*x + e)^3 + 3*c^5*cos(f*x + e)^2 +
c^5*cos(f*x + e))*log(-sin(f*x + e) + 1) - (239*c^5*cos(f*x + e)^3 + 477*c^
5*cos(f*x + e)^2 + 349*c^5*cos(f*x + e) + 15*c^5)*sin(f*x + e))/(a^3*f*cos(
f*x + e)^4 + 3*a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + a^3*f*cos(f*
x + e))
```

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((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)-2/f*((4/5*tan((f*x+exp(1))/2)^5*c^5*a^12+4/3*tan((f*x+exp(1))/2)^3
*c^5*a^12+8*tan((f*x+exp(1))/2)*c^5*a^12)/a^15-tan((f*x+exp(1))/2)*c^5/a^3/
(tan((f*x+exp(1))/2)^2-1)-2*c^5*1/2/a^3*(f*x+exp(1))/2+4*c^5/a^3*ln(abs(tan
((f*x+exp(1))/2)-1))-4*c^5/a^3*ln(abs(tan((f*x+exp(1))/2)+1)))
```

maple [A] time = 0.64, size = 179, normalized size = 1.10

$$-\frac{8c^5\left(\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{5f\,a^3}-\frac{8c^5\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^3}-\frac{16c^5\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^3}+\frac{c^5}{f\,a^3\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}-\frac{8c^5\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right.}{f\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^3,x)
```

```
[Out] -8/5/f*c^5/a^3*tan(1/2*e+1/2*f*x)^5-8/3/f*c^5/a^3*tan(1/2*e+1/2*f*x)^3-16/f
*c^5/a^3*tan(1/2*e+1/2*f*x)+1/f*c^5/a^3/(tan(1/2*e+1/2*f*x)-1)-8/f*c^5/a^3*
ln(tan(1/2*e+1/2*f*x)-1)+8/f*c^5/a^3*ln(tan(1/2*e+1/2*f*x)+1)+1/f*c^5/a^3/(
tan(1/2*e+1/2*f*x)+1)+2/f*c^5/a^3*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 562, normalized size = 3.47

$$-\frac{3\,c^5\left(\frac{40\sin\left(fx+e\right)}{\left(a^3-\frac{a^3\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}\right)\left(\cos\left(fx+e\right)+1\right)}+\frac{\frac{85\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}+\frac{10\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}+\frac{\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}}{a^3}-\frac{60\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}+1\right)}{a^3}+\frac{60\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-1\right.}{a^3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] -1/60*(3*c^5*(40*sin(f*x + e)/((a^3 - a^3*sin(f*x + e)^2/(cos(f*x + e) + 1)
^2)*(cos(f*x + e) + 1)) + (85*sin(f*x + e)/(cos(f*x + e) + 1) + 10*sin(f*x
+ e)^3/(cos(f*x + e) + 1)^3 + sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 - 60
*log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/a^3 + 60*log(sin(f*x + e)/(cos(f*
x + e) + 1) - 1)/a^3) + 5*c^5*((105*sin(f*x + e)/(cos(f*x + e) + 1) + 20*si
n(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/
a^3 - 60*log(sin(f*x + e)/(cos(f*x + e) + 1) + 1)/a^3 + 60*log(sin(f*x + e)
/(cos(f*x + e) + 1) - 1)/a^3) + c^5*((105*sin(f*x + e)/(cos(f*x + e) + 1) -
 20*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) +
1)^5)/a^3 - 120*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/a^3) + 10*c^5*(15*s
```

```
in(f*x + e)/(cos(f*x + e) + 1) + 10*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3
*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 + 5*c^5*(15*sin(f*x + e)/(cos(f*x
 + e) + 1) - 10*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos
(f*x + e) + 1)^5)/a^3 - 30*c^5*(5*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x
 + e)^5/(cos(f*x + e) + 1)^5)/a^3)/f
```

mupad [B] time = 1.49, size = 134, normalized size = 0.83

$$\frac{c^5\,x}{a^3}-\frac{16\,c^5\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{a^3\,f}-\frac{8\,c^5\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^3}{3\,a^3\,f}-\frac{8\,c^5\,{\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^5}{5\,a^3\,f}+\frac{16\,c^5\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)}{a^3\,f}+\frac{2\,c^5\,\tan\left(\frac{e}{2}+\right.}{f\,\left(a^3\,\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^5/(a + a/cos(e + f*x))^3,x)
```

```
[Out] (c^5*x)/a^3 - (16*c^5*tan(e/2 + (f*x)/2))/(a^3*f) - (8*c^5*tan(e/2 + (f*x)/
2)^3)/(3*a^3*f) - (8*c^5*tan(e/2 + (f*x)/2)^5)/(5*a^3*f) + (16*c^5*atanh(ta
n(e/2 + (f*x)/2)))/(a^3*f) + (2*c^5*tan(e/2 + (f*x)/2))/(f*(a^3*tan(e/2 + (
f*x)/2)^2 - a^3))
```

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

$$-\frac{c^5\left(\int\frac{5\sec\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{10\sec^2\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\right)dx+\int\frac{10\sec^3\left(e\right.}{\sec^3\left(e+fx\right)+3\sec^2\left(e+f\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**5/(a+a*sec(f*x+e))**3,x)
```

```
[Out] -c**5*(Integral(5*sec(e + f*x)/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec
(e + f*x) + 1), x) + Integral(-10*sec(e + f*x)**2/(sec(e + f*x)**3 + 3*sec(
e + f*x)**2 + 3*sec(e + f*x) + 1), x) + Integral(10*sec(e + f*x)**3/(sec(e
+ f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e + f*x) + 1), x) + Integral(-5*sec(e
 + f*x)**4/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e + f*x) + 1), x) +
 Integral(sec(e + f*x)**5/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e +
f*x) + 1), x) + Integral(-1/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e
+ f*x) + 1), x))/a**3
```

3.32 $\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^3}\,dx$

Optimal. Leaf size=148

$$\frac{c^4\tanh^{-1}(\sin(e+fx))}{a^3f}-\frac{c^4\tan(e+fx)\sec^2(e+fx)}{5a^3f(\sec(e+fx)+1)^3}-\frac{23c^4\tan(e+fx)}{5a^3f(\sec(e+fx)+1)}+\frac{14c^4\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^2}-\frac{3c^4 \dots}{a^3f(\sec \dots}$$

```
[Out] c^4*x/a^3+c^4*arctanh(sin(f*x+e))/a^3/f-3*c^4*tan(f*x+e)/a^3/f/(1+sec(f*x+e
))^3-1/5*c^4*sec(f*x+e)^2*tan(f*x+e)/a^3/f/(1+sec(f*x+e))^3+14/5*c^4*tan(f*
x+e)/a^3/f/(1+sec(f*x+e))^2-23/5*c^4*tan(f*x+e)/a^3/f/(1+sec(f*x+e))
```

Rubi [A] time = 0.61, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 13, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797, 3799, 4000, 3816, 4008, 3998, 3770}

$$\frac{c^4\tanh^{-1}(\sin(e+fx))}{a^3f}-\frac{c^4\tan(e+fx)\sec^2(e+fx)}{5a^3f(\sec(e+fx)+1)^3}-\frac{23c^4\tan(e+fx)}{5a^3f(\sec(e+fx)+1)}+\frac{14c^4\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^2}-\frac{3c^4 \dots}{a^3f(\sec \dots}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c^4*x)/a^3 + (c^4*ArcTanh[Sin[e + f*x]])/(a^3*f) - (3*c^4*Tan[e + f*x])/(a
^3*f*(1 + Sec[e + f*x])^3) - (c^4*Sec[e + f*x]^2*Tan[e + f*x])/(5*a^3*f*(1
+ Sec[e + f*x])^3) + (14*c^4*Tan[e + f*x])/(5*a^3*f*(1 + Sec[e + f*x])^2) -
 (23*c^4*Tan[e + f*x])/(5*a^3*f*(1 + Sec[e + f*x]))
```

Rule 3770

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

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
```

```
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3799

```
Int[csc[(e_.) + (f_.)*(x_)]^3*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)),
x] - Dist[1/(a^2*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*
(a*m - b*(2*m + 1)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a
^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3816

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_)*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (
a_))^(m_), x_Symbol] :> -Simp[(d^2*Cot[e + f*x]*(a + b*Csc[e + f*x])^m*(d*C
sc[e + f*x])^(n - 2))/(f*(2*m + 1)), x] + Dist[d^2/(a*b*(2*m + 1)), Int[(a
+ b*Csc[e + f*x])^(m + 1)*(d*Csc[e + f*x])^(n - 2)*(b*(n - 2) + a*(m - n +
2)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, d, e, f}, x] && EqQ[a^2 - b^2, 0]
&& LtQ[m, -1] && GtQ[n, 2] && (IntegersQ[2*m, 2*n] || IntegerQ[m])
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 3998

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/(csc[(
e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbol] :> Dist[B/b, Int[Csc[e + f*x],
x], x] + Dist[(A*b - a*B)/b, Int[Csc[e + f*x]/(a + b*Csc[e + f*x]), x], x]
/; FreeQ[{a, b, e, f, A, B}, x] && NeQ[A*b - a*B, 0]
```

Rule 4000

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(cs
c[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> Simp[((A*b - a*B)*Cot[e +
 f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x] + Dist[(a*B*m + A*b*(m +
1))/(a*b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x], x]
/; FreeQ[{a, b, A, B, e, f}, x] && NeQ[A*b - a*B, 0] && EqQ[a^2 - b^2, 0] &
& NeQ[a*B*m + A*b*(m + 1), 0] && LtQ[m, -2^(-1)]
```

Rule 4008

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(
csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> -Simp[((A*b - a*B)*Cot[
e + f*x]*(a + b*Csc[e + f*x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(b^2*(2*m + 1
)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*Simp[A*b*m - a*B*m + b*B*
(2*m + 1)*Csc[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B}, x] && NeQ[A
*b - a*B, 0] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^3}\,dx = \frac{\int \left(\frac{c^4}{(1+\sec(e+fx))^3}-\frac{4c^4\sec(e+fx)}{(1+\sec(e+fx))^3}+\frac{6c^4\sec^2(e+fx)}{(1+\sec(e+fx))^3}-\frac{4c^4\sec^3(e+fx)}{(1+\sec(e+fx))^3}+\frac{c^4\sec^4(e+fx)}{(1+\sec(e+fx))^3}\right)dx}{a^3}$$

$$= \frac{c^4\int \frac{1}{(1+\sec(e+fx))^3}\,dx}{a^3}+\frac{c^4\int \frac{\sec^4(e+fx)}{(1+\sec(e+fx))^3}\,dx}{a^3}-\frac{\left(4c^4\right)\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^3}\,dx}{a^3}-\frac{\left(4c^4\right)\int \frac{}{(}}{}$$

$$= -\frac{3c^4\tan(e+fx)}{a^3f(1+\sec(e+fx))^3}-\frac{c^4\sec^2(e+fx)\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{c^4\int \frac{(2-5\sec(e+fx))\sec^2(e+f}{(1+\sec(e+fx))^2}}{5a^3}$$

$$= -\frac{3c^4\tan(e+fx)}{a^3f(1+\sec(e+fx))^3}-\frac{c^4\sec^2(e+fx)\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}+\frac{14c^4\tan(e+fx)}{5a^3f(1+\sec(e+fx))^2}$$

$$= \frac{c^4x}{a^3}-\frac{3c^4\tan(e+fx)}{a^3f(1+\sec(e+fx))^3}-\frac{c^4\sec^2(e+fx)\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}+\frac{14c^4\tan(e+fx}{5a^3f(1+\sec(e+f}$$

$$= \frac{c^4x}{a^3}+\frac{c^4\tanh^{-1}(\sin(e+fx))}{a^3f}-\frac{3c^4\tan(e+fx)}{a^3f(1+\sec(e+fx))^3}-\frac{c^4\sec^2(e+fx)\tan(e+}{5a^3f(1+\sec(e+fx))}$$

Mathematica [A] time = 1.20, size = 231, normalized size = 1.56

$$c^4(\cos(e+fx)-1)^4\cot\left(\frac{1}{2}(e+fx)\right)\csc^2\left(\frac{1}{2}(e+fx)\right)\left(8\tan\left(\frac{e}{2}\right)\cot^3\left(\frac{1}{2}(e+fx)\right)\csc^2\left(\frac{1}{2}(e+fx)\right)-4\tan\left(\frac{e}{2}\right)c\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c^4*(-1 + Cos[e + f*x])^4*Cot[(e + f*x)/2]*Csc[(e + f*x)/2]^2*(5*Cot[(e +
f*x)/2]^5*(f*x - Log[Cos[(e + f*x)/2] - Sin[(e + f*x)/2]] + Log[Cos[(e + f*
x)/2] + Sin[(e + f*x)/2]]) - (9 + 8*Cos[e + f*x] + 3*Cos[2*(e + f*x)])*Csc[
(e + f*x)/2]^5*Sec[e/2]*Sin[(f*x)/2] + 8*Cot[(e + f*x)/2]^3*Csc[(e + f*x)/2
]^2*Tan[e/2] - 4*Cot[(e + f*x)/2]*Csc[(e + f*x)/2]^4*Tan[e/2]))/(10*a^3*f*(
1 + Cos[e + f*x])^3)
```

fricas [A] time = 0.48, size = 242, normalized size = 1.64

$$10\,c^4fx\cos\left(fx+e\right)^3+30\,c^4fx\cos\left(fx+e\right)^2+30\,c^4fx\cos\left(fx+e\right)+10\,c^4fx+5\left(c^4\cos\left(fx+e\right)^3+3\,c^4\cos\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/10*(10*c^4*f*x*cos(f*x + e)^3 + 30*c^4*f*x*cos(f*x + e)^2 + 30*c^4*f*x*co
s(f*x + e) + 10*c^4*f*x + 5*(c^4*cos(f*x + e)^3 + 3*c^4*cos(f*x + e)^2 + 3*
```

```
c^4*cos(f*x + e) + c^4)*log(sin(f*x + e) + 1) - 5*(c^4*cos(f*x + e)^3 + 3*c
^4*cos(f*x + e)^2 + 3*c^4*cos(f*x + e) + c^4)*log(-sin(f*x + e) + 1) - 16*(
3*c^4*cos(f*x + e)^2 + 4*c^4*cos(f*x + e) + 3*c^4)*sin(f*x + e))/(a^3*f*cos
(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f)
```

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((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)2/f*(-c^4*1/2/a^3*ln(abs(tan((f*x+exp(1))/2)-1))+c^4*1/2/a^3*ln(abs
(tan((f*x+exp(1))/2)+1))+2*c^4*1/2/a^3*(f*x+exp(1))/2+(-2/5*tan((f*x+exp(1)
)/2)^5*c^4*a^12-2*tan((f*x+exp(1))/2)*c^4*a^12)/a^15)
```

maple [A] time = 0.77, size = 110, normalized size = 0.74

$$-\frac{4c^4\left(\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{5f\,a^3}-\frac{4c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^3}-\frac{c^4\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}{f\,a^3}+\frac{c^4\ln\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+1\right)}{f\,a^3}+\frac{2c^4\arctan\left(\tan\left(\frac{e}{2}\right.\right.}{f\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^3,x)
```

```
[Out] -4/5/f*c^4/a^3*tan(1/2*e+1/2*f*x)^5-4/f*c^4/a^3*tan(1/2*e+1/2*f*x)-1/f*c^4/
a^3*ln(tan(1/2*e+1/2*f*x)-1)+1/f*c^4/a^3*ln(tan(1/2*e+1/2*f*x)+1)+2/f*c^4/a
^3*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.44, size = 396, normalized size = 2.68

$$-\frac{c^4\left(\frac{\frac{105\sin(fx+e)}{\cos(fx+e)+1}+\frac{20\sin(fx+e)^3}{(\cos(fx+e)+1)^3}+\frac{3\sin(fx+e)^5}{(\cos(fx+e)+1)^5}}{a^3}-\frac{60\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}+1\right)}{a^3}+\frac{60\log\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}-1\right)}{a^3}\right)+c^4\left(\frac{\frac{105\sin(fx+e)}{\cos(fx+e)+1}-\frac{20\sin(fx+e)^3}{(\cos(fx+e)+1)^3}+\frac{3\,\mathrm{s}}{(\cos}}{a^3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] -1/60*(c^4*((105*sin(f*x + e)/(cos(f*x + e) + 1) + 20*sin(f*x + e)^3/(cos(f
*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 - 60*log(sin(f*
x + e)/(cos(f*x + e) + 1) + 1)/a^3 + 60*log(sin(f*x + e)/(cos(f*x + e) + 1)
 - 1)/a^3) + c^4*((105*sin(f*x + e)/(cos(f*x + e) + 1) - 20*sin(f*x + e)^3/
(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 - 120*arc
tan(sin(f*x + e)/(cos(f*x + e) + 1))/a^3) + 4*c^4*(15*sin(f*x + e)/(cos(f*x
 + e) + 1) + 10*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos
(f*x + e) + 1)^5)/a^3 + 4*c^4*(15*sin(f*x + e)/(cos(f*x + e) + 1) - 10*sin(
f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^
3 - 18*c^4*(5*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^5/(cos(f*x + e
) + 1)^5)/a^3)/f
```

mupad [B] time = 1.42, size = 50, normalized size = 0.34

$$\frac{c^4\left(2\,\mathrm{atanh}\left(\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)\right)-4\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)-\frac{4\tan\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}{5}+f\,x\right)}{a^3\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^3,x)
```

```
[Out] (c^4*(2*atanh(tan(e/2 + (f*x)/2)) - 4*tan(e/2 + (f*x)/2) - (4*tan(e/2 + (f*
x)/2)^5)/5 + f*x))/(a^3*f)
```

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

$$\frac{c^4\left(\int\left(-\frac{4\sec\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\right)dx+\int\frac{6\sec^2\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}dx+\int\left(-\frac{4\sec}{\sec^3\left(e+fx\right)+3\sec^2}\right.\right.}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**4/(a+a*sec(f*x+e))**3,x)
```

```
[Out] c**4*(Integral(-4*sec(e + f*x)/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec
(e + f*x) + 1), x) + Integral(6*sec(e + f*x)**2/(sec(e + f*x)**3 + 3*sec(e
+ f*x)**2 + 3*sec(e + f*x) + 1), x) + Integral(-4*sec(e + f*x)**3/(sec(e +
f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e + f*x) + 1), x) + Integral(sec(e + f*
x)**4/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e + f*x) + 1), x) + Inte
gral(1/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e + f*x) + 1), x))/a**3
```

3.33 $\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^3} dx$

Optimal. Leaf size=96

$$-\frac{26c^3\tan(e+fx)}{15a^3f(\sec(e+fx)+1)}+\frac{4c^3\tan(e+fx)}{15a^3f(\sec(e+fx)+1)^2}-\frac{8c^3\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^3}+\frac{c^3x}{a^3}$$

```
[Out] c^3*x/a^3-8/5*c^3*tan(f*x+e)/a^3/f/(1+sec(f*x+e))^3+4/15*c^3*tan(f*x+e)/a^3
/f/(1+sec(f*x+e))^2-26/15*c^3*tan(f*x+e)/a^3/f/(1+sec(f*x+e))
```

Rubi [A] time = 0.42, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797, 3799, 4000}

$$-\frac{26c^3\tan(e+fx)}{15a^3f(\sec(e+fx)+1)}+\frac{4c^3\tan(e+fx)}{15a^3f(\sec(e+fx)+1)^2}-\frac{8c^3\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^3}+\frac{c^3x}{a^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c^3*x)/a^3 - (8*c^3*Tan[e + f*x])/(5*a^3*f*(1 + Sec[e + f*x])^3) + (4*c^3*
Tan[e + f*x])/(15*a^3*f*(1 + Sec[e + f*x])^2) - (26*c^3*Tan[e + f*x])/(15*a
^3*f*(1 + Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3799

```
Int[csc[(e_.) + (f_.)*(x_)]^3*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)),
x] - Dist[1/(a^2*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1)*
(a*m - b*(2*m + 1)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a
```

```
^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 4000

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(cs
c[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> Simp[((A*b - a*B)*Cot[e +
 f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x] + Dist[(a*B*m + A*b*(m +
1))/(a*b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x], x]
/; FreeQ[{a, b, A, B, e, f}, x] && NeQ[A*b - a*B, 0] && EqQ[a^2 - b^2, 0] &
& NeQ[a*B*m + A*b*(m + 1), 0] && LtQ[m, -2^(-1)]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^3}\,dx = \frac{\int \left(\frac{c^3}{(1+\sec(e+fx))^3}-\frac{3c^3\sec(e+fx)}{(1+\sec(e+fx))^3}+\frac{3c^3\sec^2(e+fx)}{(1+\sec(e+fx))^3}-\frac{c^3\sec^3(e+fx)}{(1+\sec(e+fx))^3}\right)dx}{a^3}$$

$$= \frac{c^3\int \frac{1}{(1+\sec(e+fx))^3}\,dx}{a^3}-\frac{c^3\int \frac{\sec^3(e+fx)}{(1+\sec(e+fx))^3}\,dx}{a^3}-\frac{\left(3c^3\right)\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^3}\,dx}{a^3}+\frac{\left(3c^3\right)\int \frac{}{(}$$

$$= -\frac{8c^3\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{c^3\int \frac{-5+2\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{5a^3}-\frac{c^3\int \frac{\sec(e+fx)(-3+5\sec(e+fx))}{(1+\sec(e+fx))^2}\,dx}{5a^3}$$

$$= -\frac{8c^3\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}+\frac{4c^3\tan(e+fx)}{15a^3f(1+\sec(e+fx))^2}+\frac{c^3\int \frac{15-7\sec(e+fx)}{1+\sec(e+fx)}\,dx}{15a^3}-\frac{(2c}{}$$

$$= \frac{c^3x}{a^3}-\frac{8c^3\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}+\frac{4c^3\tan(e+fx)}{15a^3f(1+\sec(e+fx))^2}-\frac{4c^3\tan(e+fx)}{15a^3f(1+\sec(e+f}$$

$$= \frac{c^3x}{a^3}-\frac{8c^3\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}+\frac{4c^3\tan(e+fx)}{15a^3f(1+\sec(e+fx))^2}-\frac{26c^3\tan(e+fx)}{15a^3f(1+\sec(e+f}$$

Mathematica [A] time = 0.08, size = 90, normalized size = 0.94

$$-\frac{c^3\left(-\frac{2\tan^{-1}\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f}+\frac{2\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)}{5f}-\frac{2\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)}{3f}+\frac{2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f}\right)}{a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] -((c^3*((-2*ArcTan[Tan[e/2 + (f*x)/2]])/f + (2*Tan[e/2 + (f*x)/2])/f - (2*T
an[e/2 + (f*x)/2]^3)/(3*f) + (2*Tan[e/2 + (f*x)/2]^5)/(5*f)))/a^3)
```

fricas [A] time = 0.44, size = 138, normalized size = 1.44

$$\frac{15\,c^3fx\cos\left(fx+e\right)^3+45\,c^3fx\cos\left(fx+e\right)^2+45\,c^3fx\cos\left(fx+e\right)+15\,c^3fx-2\left(23\,c^3\cos\left(fx+e\right)^2+24\,c^3\,\mathrm{c}\cdots\right.}{15\left(a^3f\cos\left(fx+e\right)^3+3\,a^3f\cos\left(fx+e\right)^2+3\,a^3f\cos\left(fx+e\right)+a^3f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(15*c^3*f*x*cos(f*x + e)^3 + 45*c^3*f*x*cos(f*x + e)^2 + 45*c^3*f*x*co
s(f*x + e) + 15*c^3*f*x - 2*(23*c^3*cos(f*x + e)^2 + 24*c^3*cos(f*x + e) +
13*c^3)*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^
3*f*cos(f*x + e) + a^3*f)
```

giac [A] time = 0.37, size = 84, normalized size = 0.88

$$\frac{\frac{15\left(fx+e\right)c^3}{a^3}-\frac{2\left(3\,a^{12}c^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5-5\,a^{12}c^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3+15\,a^{12}c^3\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)\right)}{a^{15}}}{15\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] 1/15*(15*(f*x + e)*c^3/a^3 - 2*(3*a^12*c^3*tan(1/2*f*x + 1/2*e)^5 - 5*a^12*
c^3*tan(1/2*f*x + 1/2*e)^3 + 15*a^12*c^3*tan(1/2*f*x + 1/2*e))/a^15)/f
```

maple [A] time = 0.79, size = 87, normalized size = 0.91

$$-\frac{2c^3\left(\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{5f\,a^3}+\frac{2c^3\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^3}-\frac{2c^3\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^3}+\frac{2c^3\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^3,x)
```

```
[Out] -2/5/f*c^3/a^3*tan(1/2*e+1/2*f*x)^5+2/3/f*c^3/a^3*tan(1/2*e+1/2*f*x)^3-2/f*
c^3/a^3*tan(1/2*e+1/2*f*x)+2/f*c^3/a^3*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.43, size = 277, normalized size = 2.89

$$-\frac{c^3\left(\frac{\frac{105\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{20\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}+\frac{3\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}}{a^3}-\frac{120\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^3}\right)+\frac{c^3\left(\frac{15\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}+\frac{10\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}+\frac{3\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}\right)}{a^3}+\frac{3\,c^3\left(\frac{15\sin\left(f\cdots\right.}{\cos\left(fx+\cdots\right.}\right.}{\cdots}}{60\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] -1/60*(c^3*((105*sin(f*x + e)/(cos(f*x + e) + 1) - 20*sin(f*x + e)^3/(cos(f
*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 - 120*arctan(si
n(f*x + e)/(cos(f*x + e) + 1))/a^3) + c^3*(15*sin(f*x + e)/(cos(f*x + e) +
1) + 10*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e
) + 1)^5)/a^3 + 3*c^3*(15*sin(f*x + e)/(cos(f*x + e) + 1) - 10*sin(f*x + e)
^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 - 9*c^
3*(5*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^5/(cos(f*x + e) + 1)^5)
/a^3)/f
```

mupad [B] time = 1.40, size = 93, normalized size = 0.97

$$\frac{c^3\,x}{a^3}-\frac{\frac{46\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,c^3\,{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^4}{15}-\frac{22\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,c^3\,{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^2}{15}+\frac{2\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,c^3}{5}}{a^3\,f\,{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^3,x)
```

```
[Out] (c^3*x)/a^3 - ((2*c^3*sin(e/2 + (f*x)/2))/5 - (22*c^3*cos(e/2 + (f*x)/2)^2*
sin(e/2 + (f*x)/2))/15 + (46*c^3*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2))/1
5)/(a^3*f*cos(e/2 + (f*x)/2)^5)
```

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

$$-\frac{c^3\left(\int\frac{3\sec\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{3\sec^2\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\right)dx+\int\frac{\sec^3}{\sec^3\left(e+fx\right)+3\sec^2\left(\right.}\right.}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**3/(a+a*sec(f*x+e))**3,x)
```

```
[Out] -c**3*(Integral(3*sec(e + f*x)/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec
(e + f*x) + 1), x) + Integral(-3*sec(e + f*x)**2/(sec(e + f*x)**3 + 3*sec(e
 + f*x)**2 + 3*sec(e + f*x) + 1), x) + Integral(sec(e + f*x)**3/(sec(e + f*
x)**3 + 3*sec(e + f*x)**2 + 3*sec(e + f*x) + 1), x) + Integral(-1/(sec(e +
f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e + f*x) + 1), x))/a**3
```

3.34 $\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^3}\,dx$

Optimal. Leaf size=96

$$-\frac{23c^2\tan(e+fx)}{15a^3f(\sec(e+fx)+1)}-\frac{8c^2\tan(e+fx)}{15a^3f(\sec(e+fx)+1)^2}-\frac{4c^2\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^3}+\frac{c^2x}{a^3}$$

```
[Out] c^2*x/a^3-4/5*c^2*tan(f*x+e)/a^3/f/(1+sec(f*x+e))^3-8/15*c^2*tan(f*x+e)/a^3
/f/(1+sec(f*x+e))^2-23/15*c^2*tan(f*x+e)/a^3/f/(1+sec(f*x+e))
```

Rubi [A] time = 0.30, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {3903, 3777, 3922, 3919, 3794, 3796, 3797}

$$-\frac{23c^2\tan(e+fx)}{15a^3f(\sec(e+fx)+1)}-\frac{8c^2\tan(e+fx)}{15a^3f(\sec(e+fx)+1)^2}-\frac{4c^2\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^3}+\frac{c^2x}{a^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c^2*x)/a^3 - (4*c^2*Tan[e + f*x])/(5*a^3*f*(1 + Sec[e + f*x])^3) - (8*c^2*
Tan[e + f*x])/(15*a^3*f*(1 + Sec[e + f*x])^2) - (23*c^2*Tan[e + f*x])/(15*a
^3*f*(1 + Sec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3797

```
Int[csc[(e_.) + (f_.)*(x_)]^2*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_),
x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(2*m + 1)), x]
+ Dist[m/(b*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1), x],
x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
```

```
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^3}\,dx = \frac{\int \left(\frac{c^2}{(1+\sec(e+fx))^3}-\frac{2c^2\sec(e+fx)}{(1+\sec(e+fx))^3}+\frac{c^2\sec^2(e+fx)}{(1+\sec(e+fx))^3}\right)dx}{a^3}$$
$$= \frac{c^2\int \frac{1}{(1+\sec(e+fx))^3}\,dx}{a^3}+\frac{c^2\int \frac{\sec^2(e+fx)}{(1+\sec(e+fx))^3}\,dx}{a^3}-\frac{\left(2c^2\right)\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^3}\,dx}{a^3}$$
$$= -\frac{4c^2\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{c^2\int \frac{-5+2\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{5a^3}+\frac{\left(3c^2\right)\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{5a^3}-\frac{\left(4c^2\right.}{}$$
$$= -\frac{4c^2\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{8c^2\tan(e+fx)}{15a^3f(1+\sec(e+fx))^2}+\frac{c^2\int \frac{15-7\sec(e+fx)}{1+\sec(e+fx)}\,dx}{15a^3}+\frac{c^2}{}$$
$$= \frac{c^2x}{a^3}-\frac{4c^2\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{8c^2\tan(e+fx)}{15a^3f(1+\sec(e+fx))^2}-\frac{c^2\tan(e+fx)}{15a^3f(1+\sec(e+fx}$$
$$= \frac{c^2x}{a^3}-\frac{4c^2\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{8c^2\tan(e+fx)}{15a^3f(1+\sec(e+fx))^2}-\frac{23c^2\tan(e+fx)}{15a^3f(1+\sec(e+fx}$$

Mathematica [A] time = 0.47, size = 171, normalized size = 1.78

$$\frac{c^2\sec\left(\frac{e}{2}\right)\sec^5\left(\frac{1}{2}(e+fx)\right)\left(360\sin\left(e+\frac{fx}{2}\right)-280\sin\left(e+\frac{3fx}{2}\right)+150\sin\left(2e+\frac{3fx}{2}\right)-86\sin\left(2e+\frac{5fx}{2}\right)+15\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c^2*Sec[e/2]*Sec[(e + f*x)/2]^5*(150*f*x*Cos[(f*x)/2] + 150*f*x*Cos[e + (f
*x)/2] + 75*f*x*Cos[e + (3*f*x)/2] + 75*f*x*Cos[2*e + (3*f*x)/2] + 15*f*x*C
os[2*e + (5*f*x)/2] + 15*f*x*Cos[3*e + (5*f*x)/2] - 500*Sin[(f*x)/2] + 360*
Sin[e + (f*x)/2] - 280*Sin[e + (3*f*x)/2] + 150*Sin[2*e + (3*f*x)/2] - 86*S
in[2*e + (5*f*x)/2]))/(480*a^3*f)
```

fricas [A] time = 0.44, size = 138, normalized size = 1.44

$$\frac{15\,c^2fx\cos\left(fx+e\right)^3+45\,c^2fx\cos\left(fx+e\right)^2+45\,c^2fx\cos\left(fx+e\right)+15\,c^2fx-\left(43\,c^2\cos\left(fx+e\right)^2+54\,c^2\right.}{15\left(a^3f\cos\left(fx+e\right)^3+3\,a^3f\cos\left(fx+e\right)^2+3\,a^3f\cos\left(fx+e\right)+a^3f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(15*c^2*f*x*cos(f*x + e)^3 + 45*c^2*f*x*cos(f*x + e)^2 + 45*c^2*f*x*co
s(f*x + e) + 15*c^2*f*x - (43*c^2*cos(f*x + e)^2 + 54*c^2*cos(f*x + e) + 23
*c^2)*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*
f*cos(f*x + e) + a^3*f)
```

giac [A] time = 0.33, size = 84, normalized size = 0.88

$$\frac{\frac{15\left(fx+e\right)c^2}{a^3} - \frac{3\,a^{12}c^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^5 - 10\,a^{12}c^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3 + 30\,a^{12}c^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)}{a^{15}}}{15\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] 1/15*(15*(f*x + e)*c^2/a^3 - (3*a^12*c^2*tan(1/2*f*x + 1/2*e)^5 - 10*a^12*c
^2*tan(1/2*f*x + 1/2*e)^3 + 30*a^12*c^2*tan(1/2*f*x + 1/2*e))/a^15)/f
```

maple [A] time = 0.77, size = 87, normalized size = 0.91

$$-\frac{c^2\left(\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{5f\,a^3}+\frac{2c^2\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{3f\,a^3}-\frac{2c^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^3}+\frac{2c^2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^3,x)
```

```
[Out] -1/5/f*c^2/a^3*tan(1/2*e+1/2*f*x)^5+2/3/f*c^2/a^3*tan(1/2*e+1/2*f*x)^3-2/f*
c^2/a^3*tan(1/2*e+1/2*f*x)+2/f*c^2/a^3*arctan(tan(1/2*e+1/2*f*x))
```

maxima [B] time = 0.43, size = 211, normalized size = 2.20

$$-\frac{c^2\left(\frac{\frac{105\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{20\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}+\frac{3\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}}{a^3}-\frac{120\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^3}\right)+\frac{2\,c^2\left(\frac{15\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{10\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}+\frac{3\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}\right)}{a^3}-\frac{3\,c^2\left(\frac{5\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}\right)}{a^3}}{60\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] -1/60*(c^2*((105*sin(f*x + e)/(cos(f*x + e) + 1) - 20*sin(f*x + e)^3/(cos(f
*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 - 120*arctan(si
n(f*x + e)/(cos(f*x + e) + 1))/a^3) + 2*c^2*(15*sin(f*x + e)/(cos(f*x + e)
+ 1) - 10*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x +
 e) + 1)^5)/a^3 - 3*c^2*(5*sin(f*x + e)/(cos(f*x + e) + 1) - sin(f*x + e)^5
/(cos(f*x + e) + 1)^5)/a^3)/f
```

mupad [B] time = 1.40, size = 93, normalized size = 0.97

$$\frac{c^2\,x}{a^3}-\frac{\frac{43\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,c^2\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4}{15}-\frac{16\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,c^2\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{15}+\frac{\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,c^2}{5}}{a^3\,f\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^3,x)
```

```
[Out] (c^2*x)/a^3 - ((c^2*sin(e/2 + (f*x)/2))/5 - (16*c^2*cos(e/2 + (f*x)/2)^2*si
n(e/2 + (f*x)/2))/15 + (43*c^2*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2))/15)
/(a^3*f*cos(e/2 + (f*x)/2)^5)
```

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

$$\frac{c^2\left(\int\left(-\frac{2\sec\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\right)dx+\int\frac{\sec^2\left(e+fx\right)}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\,dx+\int\frac{1}{\sec^3\left(e+fx\right)+3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)+1}\,dx\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**2/(a+a*sec(f*x+e))**3,x)
```

```
[Out] c**2*(Integral(-2*sec(e + f*x)/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec
(e + f*x) + 1), x) + Integral(sec(e + f*x)**2/(sec(e + f*x)**3 + 3*sec(e +
f*x)**2 + 3*sec(e + f*x) + 1), x) + Integral(1/(sec(e + f*x)**3 + 3*sec(e +
 f*x)**2 + 3*sec(e + f*x) + 1), x))/a**3
```

3.35 $\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^3}\,dx$

Optimal. Leaf size=88

$$-\frac{8c\tan(e+fx)}{5a^3f(\sec(e+fx)+1)}-\frac{3c\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^2}-\frac{2c\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^3}+\frac{cx}{a^3}$$

```
[Out] c*x/a^3-2/5*c*tan(f*x+e)/a^3/f/(1+sec(f*x+e))^3-3/5*c*tan(f*x+e)/a^3/f/(1+s
ec(f*x+e))^2-8/5*c*tan(f*x+e)/a^3/f/(1+sec(f*x+e))
```

Rubi [A] time = 0.20, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3903, 3777, 3922, 3919, 3794, 3796}

$$-\frac{8c\tan(e+fx)}{5a^3f(\sec(e+fx)+1)}-\frac{3c\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^2}-\frac{2c\tan(e+fx)}{5a^3f(\sec(e+fx)+1)^3}+\frac{cx}{a^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c*x)/a^3 - (2*c*Tan[e + f*x])/(5*a^3*f*(1 + Sec[e + f*x])^3) - (3*c*Tan[e
+ f*x])/(5*a^3*f*(1 + Sec[e + f*x])^2) - (8*c*Tan[e + f*x])/(5*a^3*f*(1 + S
ec[e + f*x]))
```

Rule 3777

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n_), x_Symbol] :> -Simp[(Cot[c
+ d*x]*(a + b*Csc[c + d*x])^n)/(d*(2*n + 1)), x] + Dist[1/(a^2*(2*n + 1)),
Int[(a + b*Csc[c + d*x])^(n + 1)*(a*(2*n + 1) - b*(n + 1)*Csc[c + d*x]), x]
, x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && LeQ[n, -1] && Intege
rQ[2*n]
```

Rule 3794

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> -Simp[Cot[e + f*x]/(f*(b + a*Csc[e + f*x])), x] /; FreeQ[{a, b, e, f}
, x] && EqQ[a^2 - b^2, 0]
```

Rule 3796

```
Int[csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_
Symbol] :> Simp[(b*Cot[e + f*x]*(a + b*Csc[e + f*x])^m)/(a*f*(2*m + 1)), x]
 + Dist[(m + 1)/(a*(2*m + 1)), Int[Csc[e + f*x]*(a + b*Csc[e + f*x])^(m + 1
), x], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)]
 && IntegerQ[2*m]
```

Rule 3903

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_), x_Symbol] :> Dist[c^n, Int[ExpandTrig[(1 + (d*csc[e + f*
x])/c)^n, (a + b*csc[e + f*x])^m, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IGtQ[m, 0] && ILtQ[n, 0]
&& LtQ[m + n, 2]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
```

```
a*d, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^3}\,dx = \frac{\int \left(\frac{c}{(1+\sec(e+fx))^3}-\frac{c\sec(e+fx)}{(1+\sec(e+fx))^3}\right)dx}{a^3}$$
$$= \frac{c\int \frac{1}{(1+\sec(e+fx))^3}\,dx}{a^3}-\frac{c\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^3}\,dx}{a^3}$$
$$= -\frac{2c\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{c\int \frac{-5+2\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{5a^3}-\frac{(2c)\int \frac{\sec(e+fx)}{(1+\sec(e+fx))^2}\,dx}{5a^3}$$
$$= -\frac{2c\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{3c\tan(e+fx)}{5a^3f(1+\sec(e+fx))^2}+\frac{c\int \frac{15-7\sec(e+fx)}{1+\sec(e+fx)}\,dx}{15a^3}-\frac{(2c)\ldots}{}$$
$$= \frac{cx}{a^3}-\frac{2c\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{3c\tan(e+fx)}{5a^3f(1+\sec(e+fx))^2}-\frac{2c\tan(e+fx)}{15a^3f(1+\sec(e+fx))}\ldots$$
$$= \frac{cx}{a^3}-\frac{2c\tan(e+fx)}{5a^3f(1+\sec(e+fx))^3}-\frac{3c\tan(e+fx)}{5a^3f(1+\sec(e+fx))^2}-\frac{8c\tan(e+fx)}{5a^3f(1+\sec(e+fx))}$$

Mathematica [A] time = 0.46, size = 169, normalized size = 1.92

$$\frac{c\sec\left(\frac{e}{2}\right)\sec^5\left(\frac{1}{2}(e+fx)\right)\left(110\sin\left(e+\frac{fx}{2}\right)-90\sin\left(e+\frac{3fx}{2}\right)+40\sin\left(2e+\frac{3fx}{2}\right)-26\sin\left(2e+\frac{5fx}{2}\right)+50fx\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (c*Sec[e/2]*Sec[(e + f*x)/2]^5*(50*f*x*Cos[(f*x)/2] + 50*f*x*Cos[e + (f*x)/
2] + 25*f*x*Cos[e + (3*f*x)/2] + 25*f*x*Cos[2*e + (3*f*x)/2] + 5*f*x*Cos[2*
e + (5*f*x)/2] + 5*f*x*Cos[3*e + (5*f*x)/2] - 150*Sin[(f*x)/2] + 110*Sin[e
+ (f*x)/2] - 90*Sin[e + (3*f*x)/2] + 40*Sin[2*e + (3*f*x)/2] - 26*Sin[2*e +
 (5*f*x)/2]))/(160*a^3*f)
```

fricas [A] time = 0.43, size = 124, normalized size = 1.41

$$\frac{5\,cfx\cos\left(fx+e\right)^3+15\,cfx\cos\left(fx+e\right)^2+15\,cfx\cos\left(fx+e\right)+5\,cfx-\left(13\,c\cos\left(fx+e\right)^2+19\,c\cos\left(fx+\ldots\right.\right.}{5\left(a^3f\cos\left(fx+e\right)^3+3\,a^3f\cos\left(fx+e\right)^2+3\,a^3f\cos\left(fx+e\right)+a^3f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^3,x, algorithm="fricas")
```

[Out] 1/5*(5*c*f*x*cos(f*x + e)^3 + 15*c*f*x*cos(f*x + e)^2 + 15*c*f*x*cos(f*x + e) + 5*c*f*x - (13*c*cos(f*x + e)^2 + 19*c*cos(f*x + e) + 8*c)*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f)

giac [A] time = 1.19, size = 75, normalized size = 0.85

$$\frac{\frac{10\left(fx+e\right)c}{a^3} - \frac{a^{12}c\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5 - 5a^{12}c\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3 + 20a^{12}c\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}{a^{15}}}{10f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^3,x, algorithm="giac")

[Out] 1/10*(10*(f*x + e)*c/a^3 - (a^12*c*tan(1/2*f*x + 1/2*e)^5 - 5*a^12*c*tan(1/2*f*x + 1/2*e)^3 + 20*a^12*c*tan(1/2*f*x + 1/2*e))/a^15)/f

maple [A] time = 0.75, size = 79, normalized size = 0.90

$$-\frac{c\left(\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{10f\,a^3} + \frac{c\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{2f\,a^3} - \frac{2c\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^3} + \frac{2c\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^3,x)

[Out] -1/10/f*c/a^3*tan(1/2*e+1/2*f*x)^5+1/2/f*c/a^3*tan(1/2*e+1/2*f*x)^3-2/f*c/a^3*tan(1/2*e+1/2*f*x)+2/f*c/a^3*arctan(tan(1/2*e+1/2*f*x))

maxima [A] time = 0.43, size = 159, normalized size = 1.81

$$-\frac{c\left(\frac{\frac{105\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1} - \frac{20\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3} + \frac{3\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}}{a^3} - \frac{120\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^3}\right) + \frac{c\left(\frac{15\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1} - \frac{10\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3} + \frac{3\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}\right)}{a^3}}{60f}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^3,x, algorithm="maxima")

[Out] -1/60*(c*((105*sin(f*x + e)/(cos(f*x + e) + 1) - 20*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3 - 120*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/a^3) + c*(15*sin(f*x + e)/(cos(f*x + e) + 1) - 10*sin(f*x + e)^3/(cos(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/a^3)/f

mupad [B] time = 1.38, size = 85, normalized size = 0.97

$$\frac{c\,x}{a^3} - \frac{\frac{13\,c\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4}{5} - \frac{7\,c\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{10} + \frac{c\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)}{10}}{a^3\,f\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^3,x)

[Out] (c*x)/a^3 - ((c*sin(e/2 + (f*x)/2))/10 - (7*c*cos(e/2 + (f*x)/2)^2*sin(e/2 + (f*x)/2))/10 + (13*c*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2))/5)/(a^3*f*cos(e/2 + (f*x)/2)^5)

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

$$-\frac{c\left(\int \frac{\sec\left(e+fx\right)}{\sec^{3}\left(e+fx\right)+3\sec^{2}\left(e+fx\right)+3\sec\left(e+fx\right)+1}\,dx+\int\left(-\frac{1}{\sec^{3}\left(e+fx\right)+3\sec^{2}\left(e+fx\right)+3\sec\left(e+fx\right)+1}\right)dx\right)}{a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))**3,x)
```

```
[Out] -c*(Integral(sec(e + f*x)/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e +
f*x) + 1), x) + Integral(-1/(sec(e + f*x)**3 + 3*sec(e + f*x)**2 + 3*sec(e
+ f*x) + 1), x))/a**3
```

3.36 $\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))}\,dx$

Optimal. Leaf size=126

$$\frac{2\cot^5(e+fx)}{5a^3cf}-\frac{\cot^3(e+fx)}{3a^3cf}+\frac{\cot(e+fx)}{a^3cf}-\frac{2\csc^5(e+fx)}{5a^3cf}+\frac{4\csc^3(e+fx)}{3a^3cf}-\frac{2\csc(e+fx)}{a^3cf}+\frac{x}{a^3c}$$

```
[Out] x/a^3/c+cot(f*x+e)/a^3/c/f-1/3*cot(f*x+e)^3/a^3/c/f+2/5*cot(f*x+e)^5/a^3/c/
f-2*csc(f*x+e)/a^3/c/f+4/3*csc(f*x+e)^3/a^3/c/f-2/5*csc(f*x+e)^5/a^3/c/f
```

Rubi [A] time = 0.19, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {3904, 3886, 3473, 8, 2606, 194, 2607, 30}

$$\frac{2\cot^5(e+fx)}{5a^3cf}-\frac{\cot^3(e+fx)}{3a^3cf}+\frac{\cot(e+fx)}{a^3cf}-\frac{2\csc^5(e+fx)}{5a^3cf}+\frac{4\csc^3(e+fx)}{3a^3cf}-\frac{2\csc(e+fx)}{a^3cf}+\frac{x}{a^3c}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])),x]
```

```
[Out] x/(a^3*c) + Cot[e + f*x]/(a^3*c*f) - Cot[e + f*x]^3/(3*a^3*c*f) + (2*Cot[e
+ f*x]^5)/(5*a^3*c*f) - (2*Csc[e + f*x])/(a^3*c*f) + (4*Csc[e + f*x]^3)/(3*
a^3*c*f) - (2*Csc[e + f*x]^5)/(5*a^3*c*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && 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])
```

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])
```

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 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))}\,dx = -\frac{\int \cot^6(e+fx)(c-c\sec(e+fx))^2\,dx}{a^3c^3}$$
$$= -\frac{\int \left(c^2\cot^6(e+fx)-2c^2\cot^5(e+fx)\csc(e+fx)+c^2\cot^4(e\right.}{a^3c^3}$$
$$= -\frac{\int \cot^6(e+fx)\,dx}{a^3c} - \frac{\int \cot^4(e+fx)\csc^2(e+fx)\,dx}{a^3c} + \frac{2\int \cot}{}$$
$$= \frac{\cot^5(e+fx)}{5a^3cf} + \frac{\int \cot^4(e+fx)\,dx}{a^3c} - \frac{\operatorname{Subst}\left(\int x^4\,dx, x, -\cot(e\right.}{a^3cf}$$
$$= -\frac{\cot^3(e+fx)}{3a^3cf} + \frac{2\cot^5(e+fx)}{5a^3cf} - \frac{\int \cot^2(e+fx)\,dx}{a^3c} - \frac{2\operatorname{Subst}}{}$$
$$= \frac{\cot(e+fx)}{a^3cf} - \frac{\cot^3(e+fx)}{3a^3cf} + \frac{2\cot^5(e+fx)}{5a^3cf} - \frac{2\csc(e+fx)}{a^3cf} +$$
$$= \frac{x}{a^3c} + \frac{\cot(e+fx)}{a^3cf} - \frac{\cot^3(e+fx)}{3a^3cf} + \frac{2\cot^5(e+fx)}{5a^3cf} - \frac{2\csc(e+}{a^3cf}$$

Mathematica [A] time = 0.99, size = 197, normalized size = 1.56

$$-\frac{\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\csc\left(\frac{1}{2}(e+fx)\right)\sec^5\left(\frac{1}{2}(e+fx)\right)(-445\sin(e+fx)-356\sin(2(e+fx))-89\sin(3(e+fx))+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])),x]
```

```
[Out] -1/3840*(Csc[e/2]*Csc[(e + f*x)/2]*Sec[e/2]*Sec[(e + f*x)/2]^5*(-150*f*x*Co
s[f*x] + 150*f*x*Cos[2*e + f*x] - 120*f*x*Cos[e + 2*f*x] + 120*f*x*Cos[3*e
+ 2*f*x] - 30*f*x*Cos[2*e + 3*f*x] + 30*f*x*Cos[4*e + 3*f*x] + 80*Sin[e] +
280*Sin[f*x] - 445*Sin[e + f*x] - 356*Sin[2*(e + f*x)] - 89*Sin[3*(e + f*x)
] + 240*Sin[2*e + f*x] + 296*Sin[e + 2*f*x] + 120*Sin[3*e + 2*f*x] + 104*Si
n[2*e + 3*f*x]))/(a^3*c*f)
```

fricas [A] time = 0.43, size = 109, normalized size = 0.87

$$\frac{26\cos\left(fx+e\right)^3+22\cos\left(fx+e\right)^2+15\left(fx\cos\left(fx+e\right)^2+2\,fx\cos\left(fx+e\right)+fx\right)\sin\left(fx+e\right)-17\cos\left(\right.}{15\left(a^3cf\cos\left(fx+e\right)^2+2\,a^3cf\cos\left(fx+e\right)+a^3cf\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/15*(26*cos(f*x + e)^3 + 22*cos(f*x + e)^2 + 15*(f*x*cos(f*x + e)^2 + 2*f*
x*cos(f*x + e) + f*x)*sin(f*x + e) - 17*cos(f*x + e) - 16)/((a^3*c*f*cos(f*
x + e)^2 + 2*a^3*c*f*cos(f*x + e) + a^3*c*f)*sin(f*x + e))
```

giac [A] time = 0.33, size = 107, normalized size = 0.85

$$\frac{\frac{120\left(fx+e\right)}{a^3c}+\frac{15}{a^3c\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}-\frac{3a^{12}c^4\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5-25a^{12}c^4\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3+165a^{12}c^4\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}{a^{15}c^5}}{120f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/120*(120*(f*x + e)/(a^3*c) + 15/(a^3*c*tan(1/2*f*x + 1/2*e)) - (3*a^12*c^
4*tan(1/2*f*x + 1/2*e)^5 - 25*a^12*c^4*tan(1/2*f*x + 1/2*e)^3 + 165*a^12*c^
4*tan(1/2*f*x + 1/2*e))/(a^15*c^5))/f
```

maple [A] time = 0.98, size = 109, normalized size = 0.87

$$-\frac{\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)}{40f\,a^3c}+\frac{5\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{24f\,a^3c}-\frac{11\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{8f\,a^3c}+\frac{1}{8f\,a^3c\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{f\,a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x)
```

```
[Out] -1/40/f/a^3/c*tan(1/2*e+1/2*f*x)^5+5/24/f/a^3/c*tan(1/2*e+1/2*f*x)^3-11/8/f
/a^3/c*tan(1/2*e+1/2*f*x)+1/8/f/a^3/c/tan(1/2*e+1/2*f*x)+2/f/a^3/c*arctan(t
an(1/2*e+1/2*f*x))
```

maxima [A] time = 0.42, size = 122, normalized size = 0.97

$$-\frac{\frac{\frac{165\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{25\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}+\frac{3\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}}{a^3c}-\frac{240\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^3c}-\frac{15\left(\cos\left(fx+e\right)+1\right)}{a^3c\sin\left(fx+e\right)}}{120f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -1/120*((165*sin(f*x + e)/(cos(f*x + e) + 1) - 25*sin(f*x + e)^3/(cos(f*x +
 e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/(a^3*c) - 240*arctan(si
n(f*x + e)/(cos(f*x + e) + 1))/(a^3*c) - 15*(cos(f*x + e) + 1)/(a^3*c*sin(f
*x + e)))/f
```

mupad [B] time = 1.43, size = 82, normalized size = 0.65

$$\frac{x}{a^3\,c}+\frac{\frac{26\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6}{15}-\frac{28\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4}{15}+\frac{17\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{60}-\frac{1}{40}}{a^3\,c\,f\,\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))),x)
```

```
[Out] x/(a^3*c) + ((17*cos(e/2 + (f*x)/2)^2)/60 - (28*cos(e/2 + (f*x)/2)^4)/15 +
(26*cos(e/2 + (f*x)/2)^6)/15 - 1/40)/(a^3*c*f*cos(e/2 + (f*x)/2)^5*sin(e/2
+ (f*x)/2))
```

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

$$-\frac{\int \frac{1}{\sec^4(e+fx)+2\sec^3(e+fx)-2\sec(e+fx)-1}\,dx}{a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**3/(c-c*sec(f*x+e)),x)
```

```
[Out] -Integral(1/(sec(e + f*x)**4 + 2*sec(e + f*x)**3 - 2*sec(e + f*x) - 1), x)/
(a**3*c)
```

3.37 $\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=100

$$\frac{\cot^5(e+fx)(1-\sec(e+fx))}{5a^3c^2f}-\frac{\cot^3(e+fx)(5-4\sec(e+fx))}{15a^3c^2f}+\frac{\cot(e+fx)(15-8\sec(e+fx))}{15a^3c^2f}+\frac{x}{a^3c^2}$$

```
[Out] x/a^3/c^2+1/15*cot(f*x+e)*(15-8*sec(f*x+e))/a^3/c^2/f-1/15*cot(f*x+e)^3*(5-
4*sec(f*x+e))/a^3/c^2/f+1/5*cot(f*x+e)^5*(1-sec(f*x+e))/a^3/c^2/f
```

Rubi [A] time = 0.14, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3904, 3882, 8}

$$\frac{\cot^5(e+fx)(1-\sec(e+fx))}{5a^3c^2f}-\frac{\cot^3(e+fx)(5-4\sec(e+fx))}{15a^3c^2f}+\frac{\cot(e+fx)(15-8\sec(e+fx))}{15a^3c^2f}+\frac{x}{a^3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] x/(a^3*c^2) + (Cot[e + f*x]*(15 - 8*Sec[e + f*x]))/(15*a^3*c^2*f) - (Cot[e
+ f*x]^3*(5 - 4*Sec[e + f*x]))/(15*a^3*c^2*f) + (Cot[e + f*x]^5*(1 - Sec[e
+ f*x]))/(5*a^3*c^2*f)
```

Rule 8

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

Rule 3882

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[((e*Cot[c + d*x])^(m + 1)*(a + b*Csc[c + d*x]))/(d
*e*(m + 1)), x] - Dist[1/(e^2*(m + 1)), Int[(e*Cot[c + d*x])^(m + 2)*(a*(m
+ 1) + b*(m + 2)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && LtQ[
m, -1]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^2}\,dx &= -\frac{\int \cot^6(e+fx)(c-c\sec(e+fx))\,dx}{a^3c^3}\\
&= \frac{\cot^5(e+fx)(1-\sec(e+fx))}{5a^3c^2f}-\frac{\int \cot^4(e+fx)(-5c+4c\sec(e+
}{5a^3c^3}\\
&= -\frac{\cot^3(e+fx)(5-4\sec(e+fx))}{15a^3c^2f}+\frac{\cot^5(e+fx)(1-\sec(e+fx)
}{5a^3c^2f}\\
&= \frac{\cot(e+fx)(15-8\sec(e+fx))}{15a^3c^2f}-\frac{\cot^3(e+fx)(5-4\sec(e+fx)
}{15a^3c^2f}\\
&= \frac{x}{a^3c^2}+\frac{\cot(e+fx)(15-8\sec(e+fx))}{15a^3c^2f}-\frac{\cot^3(e+fx)(5-4\sec(
}{15a^3c^2f}
\end{aligned}$$

Mathematica [B] time = 1.01, size = 257, normalized size = 2.57

$$\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\csc^3\left(\frac{1}{2}(e+fx)\right)\sec^5\left(\frac{1}{2}(e+fx)\right)(534\sin(e+fx)+178\sin(2(e+fx))-178\sin(3(e+fx))-$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] (Csc[e/2]*Csc[(e + f*x)/2]^3*Sec[e/2]*Sec[(e + f*x)/2]^5*(360*f*x*Cos[f*x]
- 360*f*x*Cos[2*e + f*x] + 120*f*x*Cos[e + 2*f*x] - 120*f*x*Cos[3*e + 2*f*x
] - 120*f*x*Cos[2*e + 3*f*x] + 120*f*x*Cos[4*e + 3*f*x] - 60*f*x*Cos[3*e +
4*f*x] + 60*f*x*Cos[5*e + 4*f*x] - 200*Sin[e] - 584*Sin[f*x] + 534*Sin[e +
f*x] + 178*Sin[2*(e + f*x)] - 178*Sin[3*(e + f*x)] - 89*Sin[4*(e + f*x)] -
520*Sin[2*e + f*x] - 248*Sin[e + 2*f*x] - 120*Sin[3*e + 2*f*x] + 248*Sin[2*
e + 3*f*x] + 120*Sin[4*e + 3*f*x] + 184*Sin[3*e + 4*f*x]))/(30720*a^3*c^2*f
)
```

fricas [A] time = 0.43, size = 154, normalized size = 1.54

$$\frac{23\cos\left(fx+e\right)^4+8\cos\left(fx+e\right)^3-27\cos\left(fx+e\right)^2+15\left(fx\cos\left(fx+e\right)^3+fx\cos\left(fx+e\right)^2-fx\cos\left(fx\right.\right.}{15\left(a^3c^2f\cos\left(fx+e\right)^3+a^3c^2f\cos\left(fx+e\right)^2-a^3c^2f\cos\left(fx+e\right)-a^3c^2f\right)\,\mathrm{s}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/15*(23*cos(f*x + e)^4 + 8*cos(f*x + e)^3 - 27*cos(f*x + e)^2 + 15*(f*x*co
s(f*x + e)^3 + f*x*cos(f*x + e)^2 - f*x*cos(f*x + e) - f*x)*sin(f*x + e) -
7*cos(f*x + e) + 8)/((a^3*c^2*f*cos(f*x + e)^3 + a^3*c^2*f*cos(f*x + e)^2 -
 a^3*c^2*f*cos(f*x + e) - a^3*c^2*f)*sin(f*x + e))
```

giac [A] time = 0.35, size = 122, normalized size = 1.22

$$\frac{\frac{240\left(fx+e\right)}{a^3c^2}+\frac{5\left(18\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^2-1\right)}{a^3c^2\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3}-\frac{3\left(a^{12}c^8\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5-10a^{12}c^8\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3+80a^{12}c^8\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)\right)}{a^{15}c^{10}}}{240f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/240*(240*(f*x + e)/(a^3*c^2) + 5*(18*tan(1/2*f*x + 1/2*e)^2 - 1)/(a^3*c^2
*tan(1/2*f*x + 1/2*e)^3) - 3*(a^12*c^8*tan(1/2*f*x + 1/2*e)^5 - 10*a^12*c^8
*tan(1/2*f*x + 1/2*e)^3 + 80*a^12*c^8*tan(1/2*f*x + 1/2*e))/(a^15*c^10))/f
```

maple [A] time = 1.08, size = 131, normalized size = 1.31

$$-\frac{\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)}{80f\,a^3c^2}+\frac{\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)}{8f\,a^3c^2}-\frac{\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{f\,a^3c^2}-\frac{1}{48f\,a^3c^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^3}+\frac{3}{8f\,a^3c^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}+\frac{2\arctan\left(\tan\left(\right.\right.}{f\,a^3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x)
```

```
[Out] -1/80/f/a^3/c^2*tan(1/2*e+1/2*f*x)^5+1/8/f/a^3/c^2*tan(1/2*e+1/2*f*x)^3-1/f
/a^3/c^2*tan(1/2*e+1/2*f*x)-1/48/f/a^3/c^2/tan(1/2*e+1/2*f*x)^3+3/8/f/a^3/c
^2/tan(1/2*e+1/2*f*x)+2/f/a^3/c^2*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.43, size = 146, normalized size = 1.46

$$-\frac{\frac{3\left(\frac{80\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{10\sin\left(fx+e\right)^{3}}{\left(\cos\left(fx+e\right)+1\right)^{3}}+\frac{\sin\left(fx+e\right)^{5}}{\left(\cos\left(fx+e\right)+1\right)^{5}}\right)}{a^{3}c^{2}}-\frac{480\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^{3}c^{2}}-\frac{5\left(\frac{18\sin\left(fx+e\right)^{2}}{\left(\cos\left(fx+e\right)+1\right)^{2}}-1\right)\left(\cos\left(fx+e\right)+1\right)^{3}}{a^{3}c^{2}\sin\left(fx+e\right)^{3}}}{240\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] -1/240*(3*(80*sin(f*x + e)/(cos(f*x + e) + 1) - 10*sin(f*x + e)^3/(cos(f*x
+ e) + 1)^3 + sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/(a^3*c^2) - 480*arctan(s
in(f*x + e)/(cos(f*x + e) + 1))/(a^3*c^2) - 5*(18*sin(f*x + e)^2/(cos(f*x +
 e) + 1)^2 - 1)*(cos(f*x + e) + 1)^3/(a^3*c^2*sin(f*x + e)^3))/f
```

mupad [B] time = 1.50, size = 161, normalized size = 1.61

$$-\frac{5\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^8+3\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^8-30\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^6+240\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^4-90\cos}{240\,a^3\,c^2\,f\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)^5\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^2),x)
```

```
[Out] -(5*cos(e/2 + (f*x)/2)^8 + 3*sin(e/2 + (f*x)/2)^8 - 30*cos(e/2 + (f*x)/2)^2
*sin(e/2 + (f*x)/2)^6 + 240*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2)^4 - 90*
cos(e/2 + (f*x)/2)^6*sin(e/2 + (f*x)/2)^2 - 240*cos(e/2 + (f*x)/2)^5*sin(e/
2 + (f*x)/2)^3*(e + f*x))/(240*a^3*c^2*f*cos(e/2 + (f*x)/2)^5*sin(e/2 + (f*
x)/2)^3)
```

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

$$\frac{\int \frac{1}{\sec^{5}{\left(e+fx\right)}+\sec^{4}{\left(e+fx\right)}-2\sec^{3}{\left(e+fx\right)}-2\sec^{2}{\left(e+fx\right)}+\sec{\left(e+fx\right)}+1}\,dx}{a^{3}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**2,x)
```

```
[Out] Integral(1/(sec(e + f*x)**5 + sec(e + f*x)**4 - 2*sec(e + f*x)**3 - 2*sec(e
 + f*x)**2 + sec(e + f*x) + 1), x)/(a**3*c**2)
```

3.38 $\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=67

$$\frac{\cot^5(e+fx)}{5a^3c^3f}-\frac{\cot^3(e+fx)}{3a^3c^3f}+\frac{\cot(e+fx)}{a^3c^3f}+\frac{x}{a^3c^3}$$

```
[Out] x/a^3/c^3+cot(f*x+e)/a^3/c^3/f-1/3*cot(f*x+e)^3/a^3/c^3/f+1/5*cot(f*x+e)^5/
a^3/c^3/f
```

Rubi [A] time = 0.08, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3904, 3473, 8}

$$\frac{\cot^5(e+fx)}{5a^3c^3f}-\frac{\cot^3(e+fx)}{3a^3c^3f}+\frac{\cot(e+fx)}{a^3c^3f}+\frac{x}{a^3c^3}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^3),x]
```

```
[Out] x/(a^3*c^3) + Cot[e + f*x]/(a^3*c^3*f) - Cot[e + f*x]^3/(3*a^3*c^3*f) + Cot
[e + f*x]^5/(5*a^3*c^3*f)
```

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 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^3}\,dx &= -\frac{\int \cot^6(e+fx)\,dx}{a^3c^3}\\
&= \frac{\cot^5(e+fx)}{5a^3c^3f}+\frac{\int \cot^4(e+fx)\,dx}{a^3c^3}\\
&= -\frac{\cot^3(e+fx)}{3a^3c^3f}+\frac{\cot^5(e+fx)}{5a^3c^3f}-\frac{\int \cot^2(e+fx)\,dx}{a^3c^3}\\
&= \frac{\cot(e+fx)}{a^3c^3f}-\frac{\cot^3(e+fx)}{3a^3c^3f}+\frac{\cot^5(e+fx)}{5a^3c^3f}+\frac{\int 1\,dx}{a^3c^3}\\
&= \frac{x}{a^3c^3}+\frac{\cot(e+fx)}{a^3c^3f}-\frac{\cot^3(e+fx)}{3a^3c^3f}+\frac{\cot^5(e+fx)}{5a^3c^3f}
\end{aligned}$$

Mathematica [C] time = 0.07, size = 39, normalized size = 0.58

$$\frac{\cot^5(e+fx)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\tan^2(e+fx)\right)}{5a^3c^3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^3),x]
```

```
[Out] (Cot[e + f*x]^5*Hypergeometric2F1[-5/2, 1, -3/2, -Tan[e + f*x]^2])/(5*a^3*c
^3*f)
```

fricas [A] time = 0.45, size = 118, normalized size = 1.76

$$\frac{23\cos\left(fx+e\right)^5-35\cos\left(fx+e\right)^3+15\left(fx\cos\left(fx+e\right)^4-2\,fx\cos\left(fx+e\right)^2+fx\right)\sin\left(fx+e\right)+15\cos\left(fx\right.}{15\left(a^3c^3f\cos\left(fx+e\right)^4-2\,a^3c^3f\cos\left(fx+e\right)^2+a^3c^3f\right)\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/15*(23*cos(f*x + e)^5 - 35*cos(f*x + e)^3 + 15*(f*x*cos(f*x + e)^4 - 2*f*
x*cos(f*x + e)^2 + f*x)*sin(f*x + e) + 15*cos(f*x + e))/((a^3*c^3*f*cos(f*x
 + e)^4 - 2*a^3*c^3*f*cos(f*x + e)^2 + a^3*c^3*f)*sin(f*x + e))
```

giac [B] time = 0.46, size = 136, normalized size = 2.03

$$\frac{\frac{480\left(fx+e\right)}{a^3c^3}+\frac{330\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^4-35\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^2+3}{a^3c^3\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5}-\frac{3a^{12}c^{12}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5-35a^{12}c^{12}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3+330a^{12}c^{12}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}{a^{15}c^{15}}}{480\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] 1/480*(480*(f*x + e)/(a^3*c^3) + (330*tan(1/2*f*x + 1/2*e)^4 - 35*tan(1/2*f
*x + 1/2*e)^2 + 3)/(a^3*c^3*tan(1/2*f*x + 1/2*e)^5) - (3*a^12*c^12*tan(1/2*
f*x + 1/2*e)^5 - 35*a^12*c^12*tan(1/2*f*x + 1/2*e)^3 + 330*a^12*c^12*tan(1/
2*f*x + 1/2*e))/(a^15*c^15))/f
```

maple [F(-2)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+a\sec\left(fx+e\right)\right)^3\left(c-c\sec\left(fx+e\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x)
```

```
[Out] int(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x)
```

maxima [A] time = 0.43, size = 56, normalized size = 0.84

$$\frac{\frac{15\left(fx+e\right)}{a^3c^3}+\frac{15\tan\left(fx+e\right)^4-5\tan\left(fx+e\right)^2+3}{a^3c^3\tan\left(fx+e\right)^5}}{15\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] 1/15*(15*(f*x + e)/(a^3*c^3) + (15*tan(f*x + e)^4 - 5*tan(f*x + e)^2 + 3)/(
a^3*c^3*tan(f*x + e)^5))/f
```

mupad [B] time = 1.57, size = 94, normalized size = 1.40

$$\frac{\frac{5\cos\left(e+f\,x\right)}{24}-\frac{5\cos\left(3\,e+3\,f\,x\right)}{48}+\frac{23\cos\left(5\,e+5\,f\,x\right)}{240}-\frac{5\sin\left(3\,e+3\,f\,x\right)\left(e+f\,x\right)}{16}+\frac{\sin\left(5\,e+5\,f\,x\right)\left(e+f\,x\right)}{16}+\frac{5\sin\left(e+f\,x\right)\left(e+f\,x\right)}{8}}{a^3\,c^3\,f\,{\sin\left(e+f\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^3),x)
```

```
[Out] ((5*cos(e + f*x))/24 - (5*cos(3*e + 3*f*x))/48 + (23*cos(5*e + 5*f*x))/240
- (5*sin(3*e + 3*f*x)*(e + f*x))/16 + (sin(5*e + 5*f*x)*(e + f*x))/16 + (5*
sin(e + f*x)*(e + f*x))/8)/(a^3*c^3*f*sin(e + f*x)^5)
```

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

$$-\frac{\int \frac{1}{\sec^6(e+fx)-3\sec^4(e+fx)+3\sec^2(e+fx)-1}\,dx}{a^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**3,x)
```

```
[Out] -Integral(1/(sec(e + f*x)**6 - 3*sec(e + f*x)**4 + 3*sec(e + f*x)**2 - 1),
x)/(a**3*c**3)
```

3.39 $\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^4}\,dx$

Optimal. Leaf size=129

$$-\frac{\cot^7(e+fx)(\sec(e+fx)+1)}{7a^3c^4f}+\frac{\cot^5(e+fx)(6\sec(e+fx)+7)}{35a^3c^4f}-\frac{\cot^3(e+fx)(24\sec(e+fx)+35)}{105a^3c^4f}+\frac{\cot(e+fx}{}$$

```
[Out] x/a^3/c^4-1/7*cot(f*x+e)^7*(1+sec(f*x+e))/a^3/c^4/f+1/35*cot(f*x+e)^5*(7+6*
sec(f*x+e))/a^3/c^4/f+1/35*cot(f*x+e)*(35+16*sec(f*x+e))/a^3/c^4/f-1/105*co
t(f*x+e)^3*(35+24*sec(f*x+e))/a^3/c^4/f
```

Rubi [A] time = 0.17, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = $\{3904, 3882, 8\}$

$$-\frac{\cot^7(e+fx)(\sec(e+fx)+1)}{7a^3c^4f}+\frac{\cot^5(e+fx)(6\sec(e+fx)+7)}{35a^3c^4f}-\frac{\cot^3(e+fx)(24\sec(e+fx)+35)}{105a^3c^4f}+\frac{\cot(e+fx}{}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^4),x]
```

```
[Out] x/(a^3*c^4) - (Cot[e + f*x]^7*(1 + Sec[e + f*x]))/(7*a^3*c^4*f) + (Cot[e +
f*x]^5*(7 + 6*Sec[e + f*x]))/(35*a^3*c^4*f) + (Cot[e + f*x]*(35 + 16*Sec[e
+ f*x]))/(35*a^3*c^4*f) - (Cot[e + f*x]^3*(35 + 24*Sec[e + f*x]))/(105*a^3*
c^4*f)
```

Rule 8

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

Rule 3882

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[((e*Cot[c + d*x])^(m + 1)*(a + b*Csc[c + d*x]))/(d
*e*(m + 1)), x] - Dist[1/(e^2*(m + 1)), Int[(e*Cot[c + d*x])^(m + 2)*(a*(m
+ 1) + b*(m + 2)*Csc[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e}, x] && LtQ[
m, -1]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^4}\,dx = \frac{\int \cot^8(e+fx)(a+a\sec(e+fx))\,dx}{a^4c^4}$$
$$= -\frac{\cot^7(e+fx)(1+\sec(e+fx))}{7a^3c^4f} + \frac{\int \cot^6(e+fx)(-7a-6a\,\mathrm{se}}{7a^4c^4}$$
$$= -\frac{\cot^7(e+fx)(1+\sec(e+fx))}{7a^3c^4f} + \frac{\cot^5(e+fx)(7+6\sec(e+}{35a^3c^4f}$$
$$= -\frac{\cot^7(e+fx)(1+\sec(e+fx))}{7a^3c^4f} + \frac{\cot^5(e+fx)(7+6\sec(e+}{35a^3c^4f}$$
$$= -\frac{\cot^7(e+fx)(1+\sec(e+fx))}{7a^3c^4f} + \frac{\cot^5(e+fx)(7+6\sec(e+}{35a^3c^4f}$$
$$= \frac{x}{a^3c^4} - \frac{\cot^7(e+fx)(1+\sec(e+fx))}{7a^3c^4f} + \frac{\cot^5(e+fx)(7+6\,\mathrm{se}}{35a^3c^4f}$$

Mathematica [B] time = 1.41, size = 362, normalized size = 2.81

$$\frac{\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\csc^7\left(\frac{1}{2}(e+fx)\right)\sec^5\left(\frac{1}{2}(e+fx)\right)(-22860\sin(e+fx)+5715\sin(2(e+fx))+11430\sin(3(e+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^4),x]
```

```
[Out] (Csc[e/2]*Csc[(e + f*x)/2]^7*Sec[e/2]*Sec[(e + f*x)/2]^5*(16800*f*x*Cos[f*x
] - 16800*f*x*Cos[2*e + f*x] - 4200*f*x*Cos[e + 2*f*x] + 4200*f*x*Cos[3*e +
 2*f*x] - 8400*f*x*Cos[2*e + 3*f*x] + 8400*f*x*Cos[4*e + 3*f*x] + 3360*f*x*
Cos[3*e + 4*f*x] - 3360*f*x*Cos[5*e + 4*f*x] + 1680*f*x*Cos[4*e + 5*f*x] -
1680*f*x*Cos[6*e + 5*f*x] - 840*f*x*Cos[5*e + 6*f*x] + 840*f*x*Cos[7*e + 6*
f*x] + 3136*Sin[e] - 30112*Sin[f*x] - 22860*Sin[e + f*x] + 5715*Sin[2*(e +
f*x)] + 11430*Sin[3*(e + f*x)] - 4572*Sin[4*(e + f*x)] - 2286*Sin[5*(e + f*
x)] + 1143*Sin[6*(e + f*x)] - 26208*Sin[2*e + f*x] + 14080*Sin[e + 2*f*x] +
 16400*Sin[2*e + 3*f*x] + 11760*Sin[4*e + 3*f*x] - 7904*Sin[3*e + 4*f*x] -
3360*Sin[5*e + 4*f*x] - 3952*Sin[4*e + 5*f*x] - 1680*Sin[6*e + 5*f*x] + 281
6*Sin[5*e + 6*f*x]))/(6881280*a^3*c^4*f)
```

fricas [A] time = 0.45, size = 232, normalized size = 1.80

$$\frac{176\cos\left(fx+e\right)^6 - 71\cos\left(fx+e\right)^5 - 335\cos\left(fx+e\right)^4 + 125\cos\left(fx+e\right)^3 + 225\cos\left(fx+e\right)^2 + 105\left(fx\right.}{105\left(a^3c^4f\cos\left(fx+e\right)^5 - a^3c^4f\cos\left(fx+e\right)^4 - 2\,a^3c^4f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] 1/105*(176*cos(f*x + e)^6 - 71*cos(f*x + e)^5 - 335*cos(f*x + e)^4 + 125*co
s(f*x + e)^3 + 225*cos(f*x + e)^2 + 105*(f*x*cos(f*x + e)^5 - f*x*cos(f*x +
 e)^4 - 2*f*x*cos(f*x + e)^3 + 2*f*x*cos(f*x + e)^2 + f*x*cos(f*x + e) - f*
x)*sin(f*x + e) - 57*cos(f*x + e) - 48)/((a^3*c^4*f*cos(f*x + e)^5 - a^3*c^
4*f*cos(f*x + e)^4 - 2*a^3*c^4*f*cos(f*x + e)^3 + 2*a^3*c^4*f*cos(f*x + e)^
2 + a^3*c^4*f*cos(f*x + e) - a^3*c^4*f)*sin(f*x + e))
```

giac [A] time = 0.44, size = 150, normalized size = 1.16

$$\frac{\frac{6720\left(fx+e\right)}{a^3c^4} + \frac{6720\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^6 - 1015\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^4 + 168\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^2 - 15}{a^3c^4\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^7} - \frac{7\left(3\,a^{12}c^{16}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^5 - 40\,a^{12}c^{16}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^3\right.}{a^{15}c^{20}}}{6720\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] 1/6720*(6720*(f*x + e)/(a^3*c^4) + (6720*tan(1/2*f*x + 1/2*e)^6 - 1015*tan(
1/2*f*x + 1/2*e)^4 + 168*tan(1/2*f*x + 1/2*e)^2 - 15)/(a^3*c^4*tan(1/2*f*x
+ 1/2*e)^7) - 7*(3*a^12*c^16*tan(1/2*f*x + 1/2*e)^5 - 40*a^12*c^16*tan(1/2*
f*x + 1/2*e)^3 + 435*a^12*c^16*tan(1/2*f*x + 1/2*e))/(a^15*c^20))/f
```

maple [A] time = 0.98, size = 174, normalized size = 1.35

$$-\frac{\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)}{320 f\,a^3c^4}+\frac{\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)}{24 f\,a^3c^4}-\frac{29\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{64 f\,a^3c^4}-\frac{1}{448 f\,a^3c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^7}+\frac{1}{40 f\,a^3c^4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^5}-\frac{2}{192 f\,a^3c^4\,\mathrm{ta}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x)
```

```
[Out] -1/320/f/a^3/c^4*tan(1/2*e+1/2*f*x)^5+1/24/f/a^3/c^4*tan(1/2*e+1/2*f*x)^3-2
9/64/f/a^3/c^4*tan(1/2*e+1/2*f*x)-1/448/f/a^3/c^4/tan(1/2*e+1/2*f*x)^7+1/40
/f/a^3/c^4/tan(1/2*e+1/2*f*x)^5-29/192/f/a^3/c^4/tan(1/2*e+1/2*f*x)^3+1/f/a
^3/c^4/tan(1/2*e+1/2*f*x)+2/f/a^3/c^4*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.44, size = 187, normalized size = 1.45

$$-\frac{\frac{7\left(\frac{435\sin(fx+e)}{\cos(fx+e)+1}-\frac{40\sin(fx+e)^3}{(\cos(fx+e)+1)^3}+\frac{3\sin(fx+e)^5}{(\cos(fx+e)+1)^5}\right)}{a^3c^4}-\frac{13440\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{a^3c^4}-\frac{\left(\frac{168\sin(fx+e)^2}{(\cos(fx+e)+1)^2}-\frac{1015\sin(fx+e)^4}{(\cos(fx+e)+1)^4}+\frac{6720\sin(fx+e)^6}{(\cos(fx+e)+1)^6}-15\right)\left(\cos(fx+e\right.}{a^3c^4\sin(fx+e)^7}}{6720 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] -1/6720*(7*(435*sin(f*x + e)/(cos(f*x + e) + 1) - 40*sin(f*x + e)^3/(cos(f*
x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/(a^3*c^4) - 13440*ar
ctan(sin(f*x + e)/(cos(f*x + e) + 1))/(a^3*c^4) - (168*sin(f*x + e)^2/(cos(
f*x + e) + 1)^2 - 1015*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 6720*sin(f*x +
 e)^6/(cos(f*x + e) + 1)^6 - 15)*(cos(f*x + e) + 1)^7/(a^3*c^4*sin(f*x + e)
^7))/f
```

mupad [B] time = 1.85, size = 209, normalized size = 1.62

$$-\frac{15\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^{12}+21\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^{12}-280\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^2\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^{10}+3045\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^4\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^8-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^4),x)
```

```
[Out] -(15*cos(e/2 + (f*x)/2)^12 + 21*sin(e/2 + (f*x)/2)^12 - 280*cos(e/2 + (f*x)
/2)^2*sin(e/2 + (f*x)/2)^10 + 3045*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2)^
8 - 6720*cos(e/2 + (f*x)/2)^6*sin(e/2 + (f*x)/2)^6 + 1015*cos(e/2 + (f*x)/2
)^8*sin(e/2 + (f*x)/2)^4 - 168*cos(e/2 + (f*x)/2)^10*sin(e/2 + (f*x)/2)^2 -
 6720*cos(e/2 + (f*x)/2)^5*sin(e/2 + (f*x)/2)^7*(e + f*x))/(6720*a^3*c^4*f*
cos(e/2 + (f*x)/2)^5*sin(e/2 + (f*x)/2)^7)
```

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

$$\frac{\int \frac{1}{\sec^7(e+fx)-\sec^6(e+fx)-3\sec^5(e+fx)+3\sec^4(e+fx)+3\sec^3(e+fx)-3\sec^2(e+fx)-\sec(e+fx)+1}\,dx}{a^3c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**4,x)
```

```
[Out] Integral(1/(sec(e + f*x)**7 - sec(e + f*x)**6 - 3*sec(e + f*x)**5 + 3*sec(e
 + f*x)**4 + 3*sec(e + f*x)**3 - 3*sec(e + f*x)**2 - sec(e + f*x) + 1), x)/
(a**3*c**4)
```

3.40 $\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^5}\,dx$

Optimal. Leaf size=210

$$\frac{2\cot^9(e+fx)}{9a^3c^5f}-\frac{\cot^7(e+fx)}{7a^3c^5f}+\frac{\cot^5(e+fx)}{5a^3c^5f}-\frac{\cot^3(e+fx)}{3a^3c^5f}+\frac{\cot(e+fx)}{a^3c^5f}+\frac{2\csc^9(e+fx)}{9a^3c^5f}-\frac{8\csc^7(e+fx)}{7a^3c^5f}+\frac{12\csc^5(}{5a^3}$$

```
[Out] x/a^3/c^5+cot(f*x+e)/a^3/c^5/f-1/3*cot(f*x+e)^3/a^3/c^5/f+1/5*cot(f*x+e)^5/
a^3/c^5/f-1/7*cot(f*x+e)^7/a^3/c^5/f+2/9*cot(f*x+e)^9/a^3/c^5/f+2*csc(f*x+e
)/a^3/c^5/f-8/3*csc(f*x+e)^3/a^3/c^5/f+12/5*csc(f*x+e)^5/a^3/c^5/f-8/7*csc(
f*x+e)^7/a^3/c^5/f+2/9*csc(f*x+e)^9/a^3/c^5/f
```

Rubi [A] time = 0.24, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {3904, 3886, 3473, 8, 2606, 194, 2607, 30}

$$\frac{2\cot^9(e+fx)}{9a^3c^5f}-\frac{\cot^7(e+fx)}{7a^3c^5f}+\frac{\cot^5(e+fx)}{5a^3c^5f}-\frac{\cot^3(e+fx)}{3a^3c^5f}+\frac{\cot(e+fx)}{a^3c^5f}+\frac{2\csc^9(e+fx)}{9a^3c^5f}-\frac{8\csc^7(e+fx)}{7a^3c^5f}+\frac{12\csc^5(}{5a^3}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^5),x]
```

```
[Out] x/(a^3*c^5) + Cot[e + f*x]/(a^3*c^5*f) - Cot[e + f*x]^3/(3*a^3*c^5*f) + Cot
[e + f*x]^5/(5*a^3*c^5*f) - Cot[e + f*x]^7/(7*a^3*c^5*f) + (2*Cot[e + f*x]^
9)/(9*a^3*c^5*f) + (2*Csc[e + f*x])/(a^3*c^5*f) - (8*Csc[e + f*x]^3)/(3*a^3
*c^5*f) + (12*Csc[e + f*x]^5)/(5*a^3*c^5*f) - (8*Csc[e + f*x]^7)/(7*a^3*c^5
*f) + (2*Csc[e + f*x]^9)/(9*a^3*c^5*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && 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])
```

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])
```

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 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^5}\,dx = -\frac{\int \cot^{10}(e+fx)(a+a\sec(e+fx))^2\,dx}{a^5c^5}$$

$$= -\frac{\int \left(a^2\cot^{10}(e+fx)+2a^2\cot^9(e+fx)\csc(e+fx)+a^2\cot^8(\right.}{a^5c^5}$$

$$= -\frac{\int \cot^{10}(e+fx)\,dx}{a^3c^5} - \frac{\int \cot^8(e+fx)\csc^2(e+fx)\,dx}{a^3c^5} - \frac{2\int c}{}$$

$$= \frac{\cot^9(e+fx)}{9a^3c^5f} + \frac{\int \cot^8(e+fx)\,dx}{a^3c^5} - \frac{\text{Subst}\left(\int x^8\,dx, x, -\cot(e\right.}{a^3c^5f}$$

$$= -\frac{\cot^7(e+fx)}{7a^3c^5f} + \frac{2\cot^9(e+fx)}{9a^3c^5f} - \frac{\int \cot^6(e+fx)\,dx}{a^3c^5} + \frac{2\,\text{Subs}}{}$$

$$= \frac{\cot^5(e+fx)}{5a^3c^5f} - \frac{\cot^7(e+fx)}{7a^3c^5f} + \frac{2\cot^9(e+fx)}{9a^3c^5f} + \frac{2\csc(e+fx)}{a^3c^5f}$$

$$= -\frac{\cot^3(e+fx)}{3a^3c^5f} + \frac{\cot^5(e+fx)}{5a^3c^5f} - \frac{\cot^7(e+fx)}{7a^3c^5f} + \frac{2\cot^9(e+fx}{9a^3c^5f}$$

$$= \frac{\cot(e+fx)}{a^3c^5f} - \frac{\cot^3(e+fx)}{3a^3c^5f} + \frac{\cot^5(e+fx)}{5a^3c^5f} - \frac{\cot^7(e+fx)}{7a^3c^5f} +$$

$$= \frac{x}{a^3c^5} + \frac{\cot(e+fx)}{a^3c^5f} - \frac{\cot^3(e+fx)}{3a^3c^5f} + \frac{\cot^5(e+fx)}{5a^3c^5f} - \frac{\cot^7(e+}{7a^3c^5}$$

Mathematica [B] time = 1.74, size = 441, normalized size = 2.10

$$\frac{\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\tan(e+fx)\sec^7(e+fx)(-1152405\sin(e+fx)+512180\sin(2(e+fx))+486571\sin(3(e+fx}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^5),x]
```

```
[Out] (Csc[e/2]*Sec[e/2]*Sec[e + f*x]^7*(453600*f*x*Cos[f*x] - 453600*f*x*Cos[2*e
 + f*x] - 201600*f*x*Cos[e + 2*f*x] + 201600*f*x*Cos[3*e + 2*f*x] - 191520*
f*x*Cos[2*e + 3*f*x] + 191520*f*x*Cos[4*e + 3*f*x] + 161280*f*x*Cos[3*e + 4
*f*x] - 161280*f*x*Cos[5*e + 4*f*x] + 10080*f*x*Cos[4*e + 5*f*x] - 10080*f*
```

```
x*Cos[6*e + 5*f*x] - 40320*f*x*Cos[5*e + 6*f*x] + 40320*f*x*Cos[7*e + 6*f*x
] + 10080*f*x*Cos[6*e + 7*f*x] - 10080*f*x*Cos[8*e + 7*f*x] + 259584*Sin[e]
 - 897024*Sin[f*x] - 1152405*Sin[e + f*x] + 512180*Sin[2*(e + f*x)] + 48657
1*Sin[3*(e + f*x)] - 409744*Sin[4*(e + f*x)] - 25609*Sin[5*(e + f*x)] + 102
436*Sin[6*(e + f*x)] - 25609*Sin[7*(e + f*x)] - 825216*Sin[2*e + f*x] + 622
976*Sin[e + 2*f*x] + 142464*Sin[3*e + 2*f*x] + 297088*Sin[2*e + 3*f*x] + 43
0080*Sin[4*e + 3*f*x] - 424192*Sin[3*e + 4*f*x] - 188160*Sin[5*e + 4*f*x] +
 2048*Sin[4*e + 5*f*x] - 40320*Sin[6*e + 5*f*x] + 112768*Sin[5*e + 6*f*x] +
 40320*Sin[7*e + 6*f*x] - 38272*Sin[6*e + 7*f*x])*Tan[e + f*x])/(2580480*a^
3*c^5*f*(-1 + Sec[e + f*x])^5*(1 + Sec[e + f*x])^3)
```

fricas [A] time = 0.46, size = 271, normalized size = 1.29

$$\frac{598\cos\left(fx+e\right)^{7}-566\cos\left(fx+e\right)^{6}-1212\cos\left(fx+e\right)^{5}+1310\cos\left(fx+e\right)^{4}+860\cos\left(fx+e\right)^{3}-1014\cos}{315\left(a^{3}c^{5}f\cos\left(fx+e\right)^{6}-2a^{3}c^{5}f\cos\left(fx+e\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] 1/315*(598*cos(f*x + e)^7 - 566*cos(f*x + e)^6 - 1212*cos(f*x + e)^5 + 1310
*cos(f*x + e)^4 + 860*cos(f*x + e)^3 - 1014*cos(f*x + e)^2 + 315*(f*x*cos(f
*x + e)^6 - 2*f*x*cos(f*x + e)^5 - f*x*cos(f*x + e)^4 + 4*f*x*cos(f*x + e)^
3 - f*x*cos(f*x + e)^2 - 2*f*x*cos(f*x + e) + f*x)*sin(f*x + e) - 197*cos(f
*x + e) + 256)/((a^3*c^5*f*cos(f*x + e)^6 - 2*a^3*c^5*f*cos(f*x + e)^5 - a^
3*c^5*f*cos(f*x + e)^4 + 4*a^3*c^5*f*cos(f*x + e)^3 - a^3*c^5*f*cos(f*x + e
)^2 - 2*a^3*c^5*f*cos(f*x + e) + a^3*c^5*f)*sin(f*x + e))
```

giac [A] time = 0.51, size = 163, normalized size = 0.78

$$\frac{\frac{40320\left(fx+e\right)}{a^{3}c^{5}}+\frac{51345\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{8}-9765\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{6}+2331\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{4}-405\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{2}+35}{a^{3}c^{5}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{9}}-\frac{63\left(a^{12}c^{20}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{5}-15a^{1}\right.}{}}{40320f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x, algorithm="giac")
```

```
[Out] 1/40320*(40320*(f*x + e)/(a^3*c^5) + (51345*tan(1/2*f*x + 1/2*e)^8 - 9765*t
an(1/2*f*x + 1/2*e)^6 + 2331*tan(1/2*f*x + 1/2*e)^4 - 405*tan(1/2*f*x + 1/2
*e)^2 + 35)/(a^3*c^5*tan(1/2*f*x + 1/2*e)^9) - 63*(a^12*c^20*tan(1/2*f*x +
1/2*e)^5 - 15*a^12*c^20*tan(1/2*f*x + 1/2*e)^3 + 185*a^12*c^20*tan(1/2*f*x
+ 1/2*e))/(a^15*c^25))/f
```

maple [A] time = 0.98, size = 197, normalized size = 0.94

$$-\frac{\tan^{5}\left(\frac{e}{2}+\frac{fx}{2}\right)}{640f\,a^{3}c^{5}}+\frac{3\left(\tan^{3}\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{128f\,a^{3}c^{5}}-\frac{37\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{128f\,a^{3}c^{5}}+\frac{1}{1152f\,a^{3}c^{5}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{9}}-\frac{9}{896f\,a^{3}c^{5}\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{7}}+\frac{}{640f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x)
```

```
[Out] -1/640/f/a^3/c^5*tan(1/2*e+1/2*f*x)^5+3/128/f/a^3/c^5*tan(1/2*e+1/2*f*x)^3-
37/128/f/a^3/c^5*tan(1/2*e+1/2*f*x)+1/1152/f/a^3/c^5/tan(1/2*e+1/2*f*x)^9-9
/896/f/a^3/c^5/tan(1/2*e+1/2*f*x)^7+37/640/f/a^3/c^5/tan(1/2*e+1/2*f*x)^5-3
1/128/f/a^3/c^5/tan(1/2*e+1/2*f*x)^3+163/128/f/a^3/c^5/tan(1/2*e+1/2*f*x)+2
/f/a^3/c^5*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.44, size = 205, normalized size = 0.98

$$-\frac{\frac{63\left(\frac{185\,\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}-\frac{15\,\sin\left(fx+e\right)^3}{\left(\cos\left(fx+e\right)+1\right)^3}+\frac{\sin\left(fx+e\right)^5}{\left(\cos\left(fx+e\right)+1\right)^5}\right)}{a^3c^5}-\frac{80640\,\arctan\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{a^3c^5}+\frac{\left(\frac{405\,\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\frac{2331\,\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}+\frac{9765\,\sin\left(fx+e\right)^6}{\left(\cos\left(fx+e\right)+1\right)^6}-\frac{51345\,\sin\left(fx+e\right)^8}{\left(\cos\left(fx+e\right)+1\right)^8}-35\right)\left(\cos\left(fx+e\right)+1\right)^9}{a^3c^5\sin\left(fx+e\right)^9}}{40320\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] -1/40320*(63*(185*sin(f*x + e)/(cos(f*x + e) + 1) - 15*sin(f*x + e)^3/(cos(
f*x + e) + 1)^3 + sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/(a^3*c^5) - 80640*ar
ctan(sin(f*x + e)/(cos(f*x + e) + 1))/(a^3*c^5) + (405*sin(f*x + e)^2/(cos(
f*x + e) + 1)^2 - 2331*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 9765*sin(f*x +
 e)^6/(cos(f*x + e) + 1)^6 - 51345*sin(f*x + e)^8/(cos(f*x + e) + 1)^8 - 35
)*(cos(f*x + e) + 1)^9/(a^3*c^5*sin(f*x + e)^9))/f
```

mupad [B] time = 2.04, size = 233, normalized size = 1.11

$$35\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^{14}-63\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^{14}+945\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^2\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^{12}-11655\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^4\sin\left(\frac{e}{2}+\frac{fx}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^5),x)
```

```
[Out] (35*cos(e/2 + (f*x)/2)^14 - 63*sin(e/2 + (f*x)/2)^14 + 945*cos(e/2 + (f*x)/
2)^2*sin(e/2 + (f*x)/2)^12 - 11655*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*x)/2)^
10 + 51345*cos(e/2 + (f*x)/2)^6*sin(e/2 + (f*x)/2)^8 - 9765*cos(e/2 + (f*x)
/2)^8*sin(e/2 + (f*x)/2)^6 + 2331*cos(e/2 + (f*x)/2)^10*sin(e/2 + (f*x)/2)^
4 - 405*cos(e/2 + (f*x)/2)^12*sin(e/2 + (f*x)/2)^2 + 40320*cos(e/2 + (f*x)/
2)^5*sin(e/2 + (f*x)/2)^9*(e + f*x))/(40320*a^3*c^5*f*cos(e/2 + (f*x)/2)^5*
sin(e/2 + (f*x)/2)^9)
```

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

$$-\frac{\int\frac{1}{\sec^8\left(e+fx\right)-2\sec^7\left(e+fx\right)-2\sec^6\left(e+fx\right)+6\sec^5\left(e+fx\right)-6\sec^3\left(e+fx\right)+2\sec^2\left(e+fx\right)+2\sec\left(e+fx\right)-1}\,dx}{a^3c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**5,x)
```

```
[Out] -Integral(1/(sec(e + f*x)**8 - 2*sec(e + f*x)**7 - 2*sec(e + f*x)**6 + 6*se
c(e + f*x)**5 - 6*sec(e + f*x)**3 + 2*sec(e + f*x)**2 + 2*sec(e + f*x) - 1)
, x)/(a**3*c**5)
```

3.41 $\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^6}\,dx$

Optimal. Leaf size=252

$$-\frac{4\cot^{11}(e+fx)}{11a^3c^6f}+\frac{\cot^9(e+fx)}{9a^3c^6f}-\frac{\cot^7(e+fx)}{7a^3c^6f}+\frac{\cot^5(e+fx)}{5a^3c^6f}-\frac{\cot^3(e+fx)}{3a^3c^6f}+\frac{\cot(e+fx)}{a^3c^6f}-\frac{4\csc^{11}(e+fx)}{11a^3c^6f}+\frac{19\csc}{9a}$$

```
[Out] x/a^3/c^6+cot(f*x+e)/a^3/c^6/f-1/3*cot(f*x+e)^3/a^3/c^6/f+1/5*cot(f*x+e)^5/
a^3/c^6/f-1/7*cot(f*x+e)^7/a^3/c^6/f+1/9*cot(f*x+e)^9/a^3/c^6/f-4/11*cot(f*
x+e)^11/a^3/c^6/f+3*csc(f*x+e)/a^3/c^6/f-16/3*csc(f*x+e)^3/a^3/c^6/f+34/5*c
sc(f*x+e)^5/a^3/c^6/f-36/7*csc(f*x+e)^7/a^3/c^6/f+19/9*csc(f*x+e)^9/a^3/c^6
/f-4/11*csc(f*x+e)^11/a^3/c^6/f
```

Rubi [A] time = 0.30, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {3904, 3886, 3473, 8, 2606, 194, 2607, 30, 270}

$$-\frac{4\cot^{11}(e+fx)}{11a^3c^6f}+\frac{\cot^9(e+fx)}{9a^3c^6f}-\frac{\cot^7(e+fx)}{7a^3c^6f}+\frac{\cot^5(e+fx)}{5a^3c^6f}-\frac{\cot^3(e+fx)}{3a^3c^6f}+\frac{\cot(e+fx)}{a^3c^6f}-\frac{4\csc^{11}(e+fx)}{11a^3c^6f}+\frac{19\csc}{9a}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^6),x]
```

```
[Out] x/(a^3*c^6) + Cot[e + f*x]/(a^3*c^6*f) - Cot[e + f*x]^3/(3*a^3*c^6*f) + Cot
[e + f*x]^5/(5*a^3*c^6*f) - Cot[e + f*x]^7/(7*a^3*c^6*f) + Cot[e + f*x]^9/(
9*a^3*c^6*f) - (4*Cot[e + f*x]^11)/(11*a^3*c^6*f) + (3*Csc[e + f*x])/(a^3*c
^6*f) - (16*Csc[e + f*x]^3)/(3*a^3*c^6*f) + (34*Csc[e + f*x]^5)/(5*a^3*c^6*
f) - (36*Csc[e + f*x]^7)/(7*a^3*c^6*f) + (19*Csc[e + f*x]^9)/(9*a^3*c^6*f)
- (4*Csc[e + f*x]^11)/(11*a^3*c^6*f)
```

Rule 8

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

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])
```

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])
```

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 3886

```
Int[(cot[(c_.) + (d_.)*(x_)]*(e_.))^(m_)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (
a_))^(n_), x_Symbol] :> Int[ExpandIntegrand[(e*Cot[c + d*x])^m, (a + b*Csc[
c + d*x])^n, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^3(c-c\sec(e+fx))^6}\,dx = \frac{\int \cot^{12}(e+fx)(a+a\sec(e+fx))^3\,dx}{a^6c^6}$$

$$= \frac{\int \left(a^3\cot^{12}(e+fx)+3a^3\cot^{11}(e+fx)\csc(e+fx)+3a^3\cot^{1}\right.}{a^6c^6}$$

$$= \frac{\int \cot^{12}(e+fx)\,dx}{a^3c^6}+\frac{\int \cot^{9}(e+fx)\csc^3(e+fx)\,dx}{a^3c^6}+\frac{3\int \text{co}}{}$$

$$= -\frac{\cot^{11}(e+fx)}{11a^3c^6f}-\frac{\int \cot^{10}(e+fx)\,dx}{a^3c^6}-\frac{\text{Subst}\left(\int x^2\left(-1+x^2\right)\right.}{a^3c^6}$$

$$= \frac{\cot^{9}(e+fx)}{9a^3c^6f}-\frac{4\cot^{11}(e+fx)}{11a^3c^6f}+\frac{\int \cot^{8}(e+fx)\,dx}{a^3c^6}-\frac{\text{Subst}\left(\right.}{}$$

$$= -\frac{\cot^{7}(e+fx)}{7a^3c^6f}+\frac{\cot^{9}(e+fx)}{9a^3c^6f}-\frac{4\cot^{11}(e+fx)}{11a^3c^6f}+\frac{3\csc(e+f}{a^3c^6f}$$

$$= \frac{\cot^{5}(e+fx)}{5a^3c^6f}-\frac{\cot^{7}(e+fx)}{7a^3c^6f}+\frac{\cot^{9}(e+fx)}{9a^3c^6f}-\frac{4\cot^{11}(e+fx)}{11a^3c^6f}$$

$$= -\frac{\cot^{3}(e+fx)}{3a^3c^6f}+\frac{\cot^{5}(e+fx)}{5a^3c^6f}-\frac{\cot^{7}(e+fx)}{7a^3c^6f}+\frac{\cot^{9}(e+fx)}{9a^3c^6f}$$

$$= \frac{\cot(e+fx)}{a^3c^6f}-\frac{\cot^{3}(e+fx)}{3a^3c^6f}+\frac{\cot^{5}(e+fx)}{5a^3c^6f}-\frac{\cot^{7}(e+fx)}{7a^3c^6f}+$$

$$= \frac{x}{a^3c^6}+\frac{\cot(e+fx)}{a^3c^6f}-\frac{\cot^{3}(e+fx)}{3a^3c^6f}+\frac{\cot^{5}(e+fx)}{5a^3c^6f}-\frac{\cot^{7}(e+}{7a^3c^6}$$

Mathematica [A] time = 2.36, size = 499, normalized size = 1.98

$$\csc\left(\frac{e}{2}\right)\sec\left(\frac{e}{2}\right)\tan(e+fx)\sec^8(e+fx)(-86058610\sin(e+fx)+51635166\sin(2(e+fx))+26599934\sin(3($$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^6),x]
```

```
[Out] (Csc[e/2]*Sec[e/2]*Sec[e + f*x]^8*(24393600*f*x*Cos[f*x] - 24393600*f*x*Cos
[2*e + f*x] - 14636160*f*x*Cos[e + 2*f*x] + 14636160*f*x*Cos[3*e + 2*f*x] -
 7539840*f*x*Cos[2*e + 3*f*x] + 7539840*f*x*Cos[4*e + 3*f*x] + 11088000*f*x
*Cos[3*e + 4*f*x] - 11088000*f*x*Cos[5*e + 4*f*x] - 2217600*f*x*Cos[4*e + 5
*f*x] + 2217600*f*x*Cos[6*e + 5*f*x] - 2217600*f*x*Cos[5*e + 6*f*x] + 22176
00*f*x*Cos[7*e + 6*f*x] + 1330560*f*x*Cos[6*e + 7*f*x] - 1330560*f*x*Cos[8*
e + 7*f*x] - 221760*f*x*Cos[7*e + 8*f*x] + 221760*f*x*Cos[9*e + 8*f*x] + 17
677440*Sin[e] - 49287040*Sin[f*x] - 86058610*Sin[e + f*x] + 51635166*Sin[2*
(e + f*x)] + 26599934*Sin[3*(e + f*x)] - 39117550*Sin[4*(e + f*x)] + 782351
0*Sin[5*(e + f*x)] + 7823510*Sin[6*(e + f*x)] - 4694106*Sin[7*(e + f*x)] +
782351*Sin[8*(e + f*x)] - 55651200*Sin[2*e + f*x] + 47971968*Sin[e + 2*f*x]
 + 14990976*Sin[3*e + 2*f*x] + 8100992*Sin[2*e + 3*f*x] + 24334464*Sin[4*e
+ 3*f*x] - 28627840*Sin[3*e + 4*f*x] - 19071360*Sin[5*e + 4*f*x] + 9687680*
Sin[4*e + 5*f*x] - 147840*Sin[6*e + 5*f*x] + 5548160*Sin[5*e + 6*f*x] + 399
1680*Sin[7*e + 6*f*x] - 4393344*Sin[6*e + 7*f*x] - 1330560*Sin[8*e + 7*f*x]
 + 953984*Sin[7*e + 8*f*x])*Tan[e + f*x])/(113541120*a^3*c^6*f*(-1 + Sec[e
+ f*x])^6*(1 + Sec[e + f*x])^3)
```

fricas [A] time = 0.45, size = 310, normalized size = 1.23

$$\frac{7453 \cos\left(fx+e\right)^{8} - 11964 \cos\left(fx+e\right)^{7} - 11866 \cos\left(fx+e\right)^{6} + 30542 \cos\left(fx+e\right)^{5} + 90 \cos\left(fx+e\right)^{4} - 26}{3465\left(a^{3}c^{6}f\cos\left(fx+e\right)^{7} - 3\,a^{3}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^6,x, algorithm="fricas")
```

```
[Out] 1/3465*(7453*cos(f*x + e)^8 - 11964*cos(f*x + e)^7 - 11866*cos(f*x + e)^6 +
 30542*cos(f*x + e)^5 + 90*cos(f*x + e)^4 - 26438*cos(f*x + e)^3 + 8539*cos
(f*x + e)^2 + 3465*(f*x*cos(f*x + e)^7 - 3*f*x*cos(f*x + e)^6 + f*x*cos(f*x
 + e)^5 + 5*f*x*cos(f*x + e)^4 - 5*f*x*cos(f*x + e)^3 - f*x*cos(f*x + e)^2
+ 3*f*x*cos(f*x + e) - f*x)*sin(f*x + e) + 7671*cos(f*x + e) - 3712)/((a^3*
c^6*f*cos(f*x + e)^7 - 3*a^3*c^6*f*cos(f*x + e)^6 + a^3*c^6*f*cos(f*x + e)^
5 + 5*a^3*c^6*f*cos(f*x + e)^4 - 5*a^3*c^6*f*cos(f*x + e)^3 - a^3*c^6*f*cos
(f*x + e)^2 + 3*a^3*c^6*f*cos(f*x + e) - a^3*c^6*f)*sin(f*x + e))
```

giac [A] time = 0.98, size = 179, normalized size = 0.71

$$\frac{\frac{887040\left(fx+e\right)}{a^{3}c^{6}} + \frac{5\left(264726 \tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{10} - 59136 \tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{8} + 18018 \tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{6} - 4554 \tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{4} + 770 \tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{2} - 63\right)}{a^{3}c^{6}\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^{11}} - }{887040\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^6,x, algorithm="giac")
```

```
[Out] 1/887040*(887040*(f*x + e)/(a^3*c^6) + 5*(264726*tan(1/2*f*x + 1/2*e)^10 -
59136*tan(1/2*f*x + 1/2*e)^8 + 18018*tan(1/2*f*x + 1/2*e)^6 - 4554*tan(1/2*
f*x + 1/2*e)^4 + 770*tan(1/2*f*x + 1/2*e)^2 - 63)/(a^3*c^6*tan(1/2*f*x + 1/
2*e)^11) - 231*(3*a^12*c^24*tan(1/2*f*x + 1/2*e)^5 - 50*a^12*c^24*tan(1/2*f
*x + 1/2*e)^3 + 690*a^12*c^24*tan(1/2*f*x + 1/2*e))/(a^15*c^30))/f
```

maple [A] time = 1.00, size = 219, normalized size = 0.87

$$-\frac{\tan^5\left(\frac{e}{2}+\frac{fx}{2}\right)}{1280 f\,a^3c^6}+\frac{5\left(\tan^3\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{384 f\,a^3c^6}-\frac{23\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{128 f\,a^3c^6}-\frac{1}{2816 f\,a^3c^6\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{11}}+\frac{5}{1152 f\,a^3c^6\tan\left(\frac{e}{2}+\frac{fx}{2}\right)^{9}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^6,x)
```

```
[Out] -1/1280/f/a^3/c^6*tan(1/2*e+1/2*f*x)^5+5/384/f/a^3/c^6*tan(1/2*e+1/2*f*x)^3
-23/128/f/a^3/c^6*tan(1/2*e+1/2*f*x)-1/2816/f/a^3/c^6/tan(1/2*e+1/2*f*x)^11
+5/1152/f/a^3/c^6/tan(1/2*e+1/2*f*x)^9-23/896/f/a^3/c^6/tan(1/2*e+1/2*f*x)^
7+13/128/f/a^3/c^6/tan(1/2*e+1/2*f*x)^5-1/3/f/a^3/c^6/tan(1/2*e+1/2*f*x)^3+
191/128/f/a^3/c^6/tan(1/2*e+1/2*f*x)+2/f/a^3/c^6*arctan(tan(1/2*e+1/2*f*x))
```

maxima [A] time = 0.45, size = 227, normalized size = 0.90

$$-\frac{\frac{231\left(\frac{690\sin(fx+e)}{\cos(fx+e)+1}-\frac{50\sin(fx+e)^3}{(\cos(fx+e)+1)^3}+\frac{3\sin(fx+e)^5}{(\cos(fx+e)+1)^5}\right)}{a^3c^6}-\frac{1774080\arctan\left(\frac{\sin(fx+e)}{\cos(fx+e)+1}\right)}{a^3c^6}-\frac{5\left(\frac{770\sin(fx+e)^2}{(\cos(fx+e)+1)^2}-\frac{4554\sin(fx+e)^4}{(\cos(fx+e)+1)^4}+\frac{18018\sin(fx+e)^6}{(\cos(fx+e)+1)^6}-\frac{591}{(c}\right.}{a^3c^6\sin(}}{887040 f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^3/(c-c*sec(f*x+e))^6,x, algorithm="maxima")
```

```
[Out] -1/887040*(231*(690*sin(f*x + e)/(cos(f*x + e) + 1) - 50*sin(f*x + e)^3/(co
s(f*x + e) + 1)^3 + 3*sin(f*x + e)^5/(cos(f*x + e) + 1)^5)/(a^3*c^6) - 1774
080*arctan(sin(f*x + e)/(cos(f*x + e) + 1))/(a^3*c^6) - 5*(770*sin(f*x + e)
^2/(cos(f*x + e) + 1)^2 - 4554*sin(f*x + e)^4/(cos(f*x + e) + 1)^4 + 18018*
sin(f*x + e)^6/(cos(f*x + e) + 1)^6 - 59136*sin(f*x + e)^8/(cos(f*x + e) +
1)^8 + 264726*sin(f*x + e)^10/(cos(f*x + e) + 1)^10 - 63)*(cos(f*x + e) + 1
)^11/(a^3*c^6*sin(f*x + e)^11))/f
```

mupad [B] time = 2.33, size = 257, normalized size = 1.02

$$-\frac{315\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^{16}+693\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^{16}-11550\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^{2}\sin\left(\frac{e}{2}+\frac{fx}{2}\right)^{14}+159390\cos\left(\frac{e}{2}+\frac{fx}{2}\right)^{4}\sin\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^6),x)
```

```
[Out] -(315*cos(e/2 + (f*x)/2)^16 + 693*sin(e/2 + (f*x)/2)^16 - 11550*cos(e/2 + (
f*x)/2)^2*sin(e/2 + (f*x)/2)^14 + 159390*cos(e/2 + (f*x)/2)^4*sin(e/2 + (f*
x)/2)^12 - 1323630*cos(e/2 + (f*x)/2)^6*sin(e/2 + (f*x)/2)^10 + 295680*cos(
e/2 + (f*x)/2)^8*sin(e/2 + (f*x)/2)^8 - 90090*cos(e/2 + (f*x)/2)^10*sin(e/2
 + (f*x)/2)^6 + 22770*cos(e/2 + (f*x)/2)^12*sin(e/2 + (f*x)/2)^4 - 3850*cos
(e/2 + (f*x)/2)^14*sin(e/2 + (f*x)/2)^2 - 887040*cos(e/2 + (f*x)/2)^5*sin(e
/2 + (f*x)/2)^11*(e + f*x))/(887040*a^3*c^6*f*cos(e/2 + (f*x)/2)^5*sin(e/2
+ (f*x)/2)^11)
```

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

$$\frac{\int \frac{1}{\sec^9(e+fx)-3\sec^8(e+fx)+8\sec^6(e+fx)-6\sec^5(e+fx)-6\sec^4(e+fx)+8\sec^3(e+fx)-3\sec(e+fx)+1}\,dx}{a^3c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**3/(c-c*sec(f*x+e))**6,x)
```

```
[Out] Integral(1/(sec(e + f*x)**9 - 3*sec(e + f*x)**8 + 8*sec(e + f*x)**6 - 6*sec
(e + f*x)**5 - 6*sec(e + f*x)**4 + 8*sec(e + f*x)**3 - 3*sec(e + f*x) + 1),
 x)/(a**3*c**6)
```

3.42 $\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^4\,dx$

Optimal. Leaf size=175

$$\frac{2a^4c^4\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}-\frac{2a^3c^4\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^2c^4\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2\sqrt{a}\,c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{}{f}$$

```
[Out] 2*c^4*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/f-2*a*c^4*t
an(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a^2*c^4*tan(f*x+e)^3/f/(a+a*sec(f*x+
e))^(3/2)-2/5*a^3*c^4*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)+2/7*a^4*c^4*tan
(f*x+e)^7/f/(a+a*sec(f*x+e))^(7/2)
```

Rubi [A] time = 0.18, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 302, 203}

$$\frac{2a^4c^4\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}-\frac{2a^3c^4\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^2c^4\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2\sqrt{a}\,c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{}{f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (2*Sqrt[a]*c^4*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f -
 (2*a*c^4*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*c^4*Tan[e + f
*x]^3)/(3*f*(a + a*Sec[e + f*x])^(3/2)) - (2*a^3*c^4*Tan[e + f*x]^5)/(5*f*(
a + a*Sec[e + f*x])^(5/2)) + (2*a^4*c^4*Tan[e + f*x]^7)/(7*f*(a + a*Sec[e +
 f*x])^(7/2))
```

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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^4\,dx = \left(a^4c^4\right)\int \frac{\tan^8(e+fx)}{(a+a\sec(e+fx))^{7/2}}\,dx$$
$$= -\frac{\left(2a^5c^4\right)\text{Subst}\left(\int \frac{x^8}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{\left(2a^5c^4\right)\text{Subst}\left(\int \left(-\frac{1}{a^4}+\frac{x^2}{a^3}-\frac{x^4}{a^2}+\frac{x^6}{a}+\frac{1}{a^4(1+ax^2)}\right)dx, x, -\frac{\tan(}{\sqrt{a+a\,\mathrm{s}}}\right.}{f}$$
$$= -\frac{2ac^4\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2a^2c^4\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}}-\frac{2a^3c^4\tan^5}{5f(a+a\sec}$$
$$= \frac{2\sqrt{a}\,c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}-\frac{2ac^4\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2a^2c^4\,\mathrm{t}}{3f(a+a\,\mathrm{s}}$$

Mathematica [A] time = 1.05, size = 121, normalized size = 0.69

$$\frac{2c^4\tan\left(\frac{1}{2}(e+fx)\right)\sec^3(e+fx)\sqrt{a(\sec(e+fx)+1)}\,\left((-198\cos(e+fx)+61\cos(2(e+fx))-44\cos(3(e+fx))\right.}{105f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (2*c^4*(105*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^3 + (76 - 198*Cos[
e + f*x] + 61*Cos[2*(e + f*x)] - 44*Cos[3*(e + f*x)])*Sqrt[-1 + Sec[e + f*x
]])*Sec[e + f*x]^3*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(105*f*Sqrt
[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.51, size = 373, normalized size = 2.13

$$\left[\frac{105\left(c^4\cos\left(fx+e\right)^4+c^4\cos\left(fx+e\right)^3\right)\sqrt{-a}\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)-}{105\left(f\cos\left(fx+e\right)^4+f\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/105*(105*(c^4*cos(f*x + e)^4 + c^4*cos(f*x + e)^3)*sqrt(-a)*log((2*a*cos
(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(176*c^4*cos(
f*x + e)^3 - 122*c^4*cos(f*x + e)^2 + 66*c^4*cos(f*x + e) - 15*c^4)*sqrt((a
*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^4 + f*cos(f*
x + e)^3), -2/105*(105*(c^4*cos(f*x + e)^4 + c^4*cos(f*x + e)^3)*sqrt(a)*ar
ctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x
+ e))) + (176*c^4*cos(f*x + e)^3 - 122*c^4*cos(f*x + e)^2 + 66*c^4*cos(f*x
+ e) - 15*c^4)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos
(f*x + e)^4 + f*cos(f*x + e)^3)]
```

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((c-c*sec(f*x+e))^4*(a+a*sec(f*x+e))^(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)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)2*(2*(((-77/30*sqrt(2)*a^4*c^4*sign(cos(f*x+exp(1)))+379/210*sqrt(2)*
a^4*c^4*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1)))^2)*tan(1/2*(f*x+exp(1))
)^2+11/6*sqrt(2)*a^4*c^4*sign(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2-1/2
*sqrt(2)*a^4*c^4*sign(cos(f*x+exp(1))))/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/
(-a*tan(1/2*(f*x+exp(1)))^2+a)^3*tan(1/2*(f*x+exp(1)))-1/2*a*sqrt(-a)*c^4*s
ign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*
tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+
exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(
a))/f
```

maple [B] time = 1.90, size = 391, normalized size = 2.23

$$c^4\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(105\,\mathrm{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{7}{2}}\left(\cos^3\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}+3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^4*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/840*c^4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(105*arctanh(1/2*(-2*cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(7/2)*cos(f*x+e)^3*sin(f*x+e)*2^(1/2)+315*arctanh(1/2*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)
/(1+cos(f*x+e)))^(7/2)*cos(f*x+e)^2*sin(f*x+e)*2^(1/2)+315*arctanh(1/2*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(7/2)*cos(f*x+e)*sin(f*x+e)*2^(1/2)+105*2^(1/2)*arctanh
(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*sin(f*x+e)+2816*cos(f*x+e)^4-4768*cos(f*
x+e)^3+3008*cos(f*x+e)^2-1296*cos(f*x+e)+240)/cos(f*x+e)^3/sin(f*x+e)
```

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((c-c*sec(f*x+e))^4*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^4,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^4, x)
```

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

$$c^4\left(\int\left(-4\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)\right)dx+\int 6\sqrt{a\sec\left(e+fx\right)+a}\,\sec^2\left(e+fx\right)dx+\int\left(-4\sqrt{a\sec\left(e+\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**4*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] c**4*(Integral(-4*sqrt(a*sec(e + f*x) + a)*sec(e + f*x), x) + Integral(6*sq
rt(a*sec(e + f*x) + a)*sec(e + f*x)**2, x) + Integral(-4*sqrt(a*sec(e + f*x
) + a)*sec(e + f*x)**3, x) + Integral(sqrt(a*sec(e + f*x) + a)*sec(e + f*x)
**4, x) + Integral(sqrt(a*sec(e + f*x) + a), x))
```

3.43 $\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^3\,dx$

Optimal. Leaf size=140

$$-\frac{2a^3c^3\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^2c^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2\sqrt{a}\,c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2ac^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*c^3*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/f-2*a*c^3*t
an(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a^2*c^3*tan(f*x+e)^3/f/(a+a*sec(f*x+
e))^(3/2)-2/5*a^3*c^3*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.17, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 302, 203}

$$-\frac{2a^3c^3\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^2c^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2\sqrt{a}\,c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2ac^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*Sqrt[a]*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f -
 (2*a*c^3*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*c^3*Tan[e + f
*x]^3)/(3*f*(a + a*Sec[e + f*x])^(3/2)) - (2*a^3*c^3*Tan[e + f*x]^5)/(5*f*(
a + a*Sec[e + f*x])^(5/2))
```

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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^3\,dx = -\left(\left(a^3c^3\right)\int \frac{\tan^6(e+fx)}{(a+a\sec(e+fx))^{5/2}}\,dx\right)$$
$$= \frac{\left(2a^4c^3\right)\text{Subst}\left(\int \frac{x^6}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= \frac{\left(2a^4c^3\right)\text{Subst}\left(\int \left(\frac{1}{a^3}-\frac{x^2}{a^2}+\frac{x^4}{a}-\frac{1}{a^3\left(1+ax^2\right)}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{2ac^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2c^3\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{2a^3c^3\tan^5}{5f(a+a\sec}$$
$$= \frac{2\sqrt{a}\,c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} - \frac{2ac^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2c^3\text{t}}{3f(a+a\text{s}}$$

Mathematica [A] time = 1.19, size = 111, normalized size = 0.79

$$\frac{c^3\tan\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\,\left((22\cos(e+fx)-23\cos(2(e+fx))-29)\sqrt{\sec(e+fx)-1}\right.}{15f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (c^3*(30*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^2 + (-29 + 22*Cos[e +
 f*x] - 23*Cos[2*(e + f*x)])*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]^2*Sqrt[a
*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(15*f*Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.48, size = 347, normalized size = 2.48

$$\left[\frac{15\left(c^3\cos\left(fx+e\right)^3+c^3\cos\left(fx+e\right)^2\right)\sqrt{-a}\log\left(\frac{2a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)-}{15\left(f\cos\left(fx+e\right)^3+f\cos\left(fx+e\right)^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/15*(15*(c^3*cos(f*x + e)^3 + c^3*cos(f*x + e)^2)*sqrt(-a)*log((2*a*cos(f
*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)
*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(23*c^3*cos(f*x
 + e)^2 - 11*c^3*cos(f*x + e) + 3*c^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
e))*sin(f*x + e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^2), -2/15*(15*(c^3*cos
(f*x + e)^3 + c^3*cos(f*x + e)^2)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (23*c^3*cos(f*x + e)^2
 - 11*c^3*cos(f*x + e) + 3*c^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin
(f*x + e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^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((c-c*sec(f*x+e))^3*(a+a*sec(f*x+e))^(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)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)-2*(2*((-4/3*sqrt(2)*a^3*c^3*sign(cos(
f*x+exp(1)))+37/30*sqrt(2)*a^3*c^3*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1
)))^2)*tan(1/2*(f*x+exp(1)))^2+1/2*sqrt(2)*a^3*c^3*sign(cos(f*x+exp(1))))/s
qrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^2*tan(1/2*
(f*x+exp(1)))+1/2*a*sqrt(-a)*c^3*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*ta
n(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)
-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1
))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.75, size = 302, normalized size = 2.16

$$-\frac{c^3\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(15\sin\left(fx+e\right)\sqrt{2}\,\left(\cos^2\left(fx+e\right)\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)\left(-\frac{2\cos(fx+e)}{1+\cos(fx+e)}\right)^{\frac{5}{2}}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^3*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/60*c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(15*sin(f*x+e)*2^(1/2)*cos(
f*x+e)^2*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*
x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)+30*sin(f*x+e)*2^(1/2)*co
s(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*
x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)+15*2^(1/2)*arctanh(1/2*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(5/2)*sin(f*x+e)-184*cos(f*x+e)^3+272*cos(f*x+e)^2-1
12*cos(f*x+e)+24)/sin(f*x+e)/cos(f*x+e)^2
```

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((c-c*sec(f*x+e))^3*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^3,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^3, x)
```

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

$$-c^3\left(\int 3\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)dx+\int\left(-3\sqrt{a\sec\left(e+fx\right)+a}\,\sec^2\left(e+fx\right)\right)dx+\int\sqrt{a\sec\left(e+f\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**3*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] -c**3*(Integral(3*sqrt(a*sec(e + f*x) + a)*sec(e + f*x), x) + Integral(-3*s
qrt(a*sec(e + f*x) + a)*sec(e + f*x)**2, x) + Integral(sqrt(a*sec(e + f*x)
+ a)*sec(e + f*x)**3, x) + Integral(-sqrt(a*sec(e + f*x) + a), x))
```

3.44 $\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^2\,dx$

Optimal. Leaf size=105

$$\frac{2a^2c^2\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2\sqrt{a}\,c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2ac^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*c^2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/f-2*a*c^2*t
an(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a^2*c^2*tan(f*x+e)^3/f/(a+a*sec(f*x+
e))^(3/2)
```

Rubi [A] time = 0.16, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 302, 203}

$$\frac{2a^2c^2\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2\sqrt{a}\,c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2ac^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (2*Sqrt[a]*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f -
 (2*a*c^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*c^2*Tan[e + f
*x]^3)/(3*f*(a + a*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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^2\,dx = \left(a^2c^2\right)\int \frac{\tan^4(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx$$
$$= -\frac{\left(2a^3c^2\right)\text{Subst}\left(\int \frac{x^4}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{\left(2a^3c^2\right)\text{Subst}\left(\int \left(-\frac{1}{a^2}+\frac{x^2}{a}+\frac{1}{a^2(1+ax^2)}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{2ac^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2c^2\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{\left(2ac^2\right)\text{Subst}}{}$$
$$= \frac{2\sqrt{a}\,c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} - \frac{2ac^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2c^2\text{t}}{3f(a+a\text{s}}$$

Mathematica [A] time = 0.89, size = 97, normalized size = 0.92

$$-\frac{2c^2\tan\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{a(\sec(e+fx)+1)}\left((4\cos(e+fx)-1)\sqrt{\sec(e+fx)-1}-3\cos(e+fx)\tan^{-1}\right.}{3f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (-2*c^2*(-3*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x] + (-1 + 4*Cos[e +
f*x])*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]*Sqrt[a*(1 + Sec[e + f*x])]*Tan[
(e + f*x)/2])/(3*f*Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.49, size = 313, normalized size = 2.98

$$\left[\frac{3\left(c^2\cos\left(fx+e\right)^2+c^2\cos\left(fx+e\right)\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)-2\left(\right.}{3\left(f\cos\left(fx+e\right)^2+f\cos\left(fx+e\right)\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(c^2*cos(f*x + e)^2 + c^2*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x +
 e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(4*c^2*cos(f*x + e)
 - c^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x +
e)^2 + f*cos(f*x + e)), -2/3*(3*(c^2*cos(f*x + e)^2 + c^2*cos(f*x + e))*sqr
t(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*s
in(f*x + e))) + (4*c^2*cos(f*x + e) - c^2)*sqrt((a*cos(f*x + e) + a)/cos(f*
x + e))*sin(f*x + e))/(f*cos(f*x + e)^2 + f*cos(f*x + e))]
```

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((c-c*sec(f*x+e))^2*(a+a*sec(f*x+e))^(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: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)2*(2/sq
rt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)*(-1/2*sqrt(
2)*a^2*c^2*sign(cos(f*x+exp(1)))+5/6*sqrt(2)*a^2*c^2*sign(cos(f*x+exp(1)))*
tan(1/2*(f*x+exp(1)))^2)*tan(1/2*(f*x+exp(1)))-1/2*a*sqrt(-a)*c^2*sign(cos(
f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))
^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [A] time = 1.71, size = 142, normalized size = 1.35

$$-\frac{c^{2}\left(3\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)-8\left(\cos^{2}\left(fx+e\right)\right)+1\cdots}{3f\sin\left(fx+e\right)\cos\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^2*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/3*c^2/f*(3*cos(f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^
(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e
)*2^(1/2))-8*cos(f*x+e)^2+10*cos(f*x+e)-2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1
/2)/sin(f*x+e)/cos(f*x+e)
```

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((c-c*sec(f*x+e))^2*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^2, x)
```

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

$$c^{2}\left(\int\left(-2\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)\right)dx+\int\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{2}\left(e+fx\right)dx+\int\sqrt{a\sec\left(e+f\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**2*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] c**2*(Integral(-2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x), x) + Integral(sqrt
(a*sec(e + f*x) + a)*sec(e + f*x)**2, x) + Integral(sqrt(a*sec(e + f*x) + a
), x))
```

3.45 $\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))\,dx$

Optimal. Leaf size=66

$$\frac{2\sqrt{a}\,c\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2ac\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/f-2*a*c*tan(f
*x+e)/f/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {3904, 3887, 321, 203}

$$\frac{2\sqrt{a}\,c\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2ac\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*Sqrt[a]*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f - (
2*a*c*Tan[e + f*x])/(f*Sqrt[a + a*Sec[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 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 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] && !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))\,dx = -\left((ac)\int \frac{\tan^2(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx\right)$$
$$= \frac{(2a^2c)\,\text{Subst}\left(\int \frac{x^2}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{2ac\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{(2ac)\,\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right.}{f}$$
$$= \frac{2\sqrt{a}\,c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} - \frac{2ac\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}$$

Mathematica [A] time = 0.32, size = 70, normalized size = 1.06

$$-\frac{2c\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(\sqrt{\sec(e+fx)-1}-\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)\right)}{f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x]),x]
```

```
[Out] (-2*c*(-ArcTan[Sqrt[-1 + Sec[e + f*x]]] + Sqrt[-1 + Sec[e + f*x]])*Sqrt[a*(
1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(f*Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.44, size = 234, normalized size = 3.55

$$\left[\frac{\left(c\cos\left(fx+e\right)+c\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)-2\,c\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\sin}{f\cos\left(fx+e\right)+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [((c*cos(f*x + e) + c)*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e
) - a)/(cos(f*x + e) + 1)) - 2*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*si
n(f*x + e))/(f*cos(f*x + e) + f), -2*((c*cos(f*x + e) + c)*sqrt(a)*arctan(s
qrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))
 + c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)
+ f)]
```

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((c-c*sec(f*x+e))*(a+a*sec(f*x+e))^(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: (4*pi/x/2)>(-4
```

```
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (2*pi/x/2)>(-2*pi/x/2)-2*(1/2*a*sqrt(-a)*c*sign(cos(f*x+exp(1)))*ln(abs(2
*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sq
rt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/
2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a)+sqrt(2)*a*c*sqrt(-a*tan(1/
2*(f*x+exp(1)))^2+a)*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1)))/(-a*tan(1/
2*(f*x+exp(1)))^2+a))/f
```

maple [A] time = 1.42, size = 115, normalized size = 1.74

$$\frac{c\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-\sqrt{2}\,\sin\left(fx+e\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}+2\cos\left(fx+e\right)-2\right)}{f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-2^(1/2)*sin(f*x+e)*arctanh(1/2*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)+2*cos(f*x+e)-2)/sin(f*x+e)
```

maxima [B] time = 0.84, size = 147, normalized size = 2.23

$$\frac{\sqrt{a}\,c\arctan\left(\left(\cos\left(2\,fx+2\,e\right)^{2}+\sin\left(2\,fx+2\,e\right)^{2}+2\,\cos\left(2\,fx+2\,e\right)+1\right)^{\frac{1}{4}}\sin\left(\frac{1}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] sqrt(a)*c*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x +
2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) +
sin(f*x + e), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e)
 + 1)^(1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) + cos(
f*x + e))/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x)), x)
```

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

$$-c\left(\int\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)dx+\int\left(-\sqrt{a\sec\left(e+fx\right)+a}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] -c*(Integral(sqrt(a*sec(e + f*x) + a)*sec(e + f*x), x) + Integral(-sqrt(a*s
ec(e + f*x) + a), x))
```

3.46 $\int \frac{\sqrt{a+a\sec(e+fx)}}{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=69

$$\frac{2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{cf}+\frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/c/f+2*cot(f*x+e
)*(a+a*sec(f*x+e))^(1/2)/c/f
```

Rubi [A] time = 0.15, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 325, 203}

$$\frac{2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{cf}+\frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c*f) +
 (2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c*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 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 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{c-c\sec(e+fx)}\,dx = -\frac{\int \cot^2(e+fx)(a+a\sec(e+fx))^{3/2}\,dx}{ac}$$
$$= \frac{2\,\text{Subst}\left(\int \frac{1}{x^2(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf}$$
$$= \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{cf} - \frac{(2a)\,\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf}$$
$$= \frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} + \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{cf}$$

Mathematica [A] time = 0.59, size = 90, normalized size = 1.30

$$\frac{2a\tan(e+fx)\sec(e+fx)\left(\cos(e+fx)\sqrt{\sec(e+fx)-1} - (\cos(e+fx)-1)\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)\right)}{cf(\sec(e+fx)-1)^{3/2}\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*a*(-(ArcTan[Sqrt[-1 + Sec[e + f*x]]]*(-1 + Cos[e + f*x])) + Cos[e + f*x]
*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]*Tan[e + f*x])/(c*f*(-1 + Sec[e + f*x
])^(3/2)*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 0.59, size = 266, normalized size = 3.86

$$\left[\frac{\sqrt{-a}\log\left(-\frac{8\,a\cos\left(fx+e\right)^3-4\left(2\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)-7\,a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)+1}\right)\sin\left(fx+e\right)+4\sqrt{\frac{a\cos(fx+}{\cos(fx+}}}{2\,cf\sin\left(fx+e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(-a)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x + e
))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(
f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*sqrt((a*cos(f*x + e) + a
)/cos(f*x + e))*cos(f*x + e))/(c*f*sin(f*x + e)), (sqrt(a)*arctan(2*sqrt(a)
*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos
(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*sqrt((a*cos(f*x + e) +
a)/cos(f*x + e))*cos(f*x + e))/(c*f*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)-4*sqrt(2)*(1/2*a*sq
rt(-a)/c/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))
))^2-a)+1/4*a*sqrt(-a)*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a
)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*
x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/sq
rt(2)/c/abs(a))*sign(cos(f*x+exp(1)))/f
```

maple [A] time = 1.58, size = 116, normalized size = 1.68

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(\sqrt{2}\,\sin\left(fx+e\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}-2\cos\left(fx+e\right)\right)}{cf\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -1/c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(2^(1/2)*sin(f*x+e)*arctanh(1/2*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)-2*cos(f*x+e))/sin(f*x+e)
```

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

$$-\int\frac{\sqrt{a\sec\left(fx+e\right)+a}}{c\sec\left(fx+e\right)-c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(a*sec(f*x + e) + a)/(c*sec(f*x + e) - c), x)
```

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

$$\int\frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{c-\frac{c}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x)), x)
```

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

$$-\frac{\int\frac{\sqrt{a\sec\left(e+fx\right)+a}}{\sec\left(e+fx\right)-1}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -Integral(sqrt(a*sec(e + f*x) + a)/(sec(e + f*x) - 1), x)/c
```

3.47 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=104

$$-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3ac^2f}+\frac{2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^2f}+\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^2f}$$

```
[Out] -2/3*cot(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a/c^2/f+2*arctan(a^(1/2)*tan(f*x+e
)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/c^2/f+2*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)
/c^2/f
```

Rubi [A] time = 0.16, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 325, 203}

$$-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3ac^2f}+\frac{2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^2f}+\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^2*f)
 + (2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^2*f) - (2*Cot[e + f*x]^3*(a
 + a*Sec[e + f*x])^(3/2))/(3*a*c^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 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 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^2}\,dx = \frac{\int \cot^4(e+fx)(a+a\sec(e+fx))^{5/2}\,dx}{a^2c^2}$$

$$= -\frac{2\,\text{Subst}\left(\int \frac{1}{x^4(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{ac^2f}$$

$$= -\frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3ac^2f} + \frac{2\,\text{Subst}\left(\int \frac{1}{x^2(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f}$$

$$= \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^2f} - \frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3ac^2f} - \frac{(2a)\,\text{Subst}}{}$$

$$= \frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f} + \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^2f} - \frac{2\cot^3(e+fx)(a+}{3ac^2}$$

Mathematica [C] time = 0.24, size = 78, normalized size = 0.75

$$-\frac{2\sqrt{\cos(e+fx)}\,\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\;{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};2\sin^2\left(\frac{1}{2}(e+fx)\right)\right)}{3c^2f(\cos(e+fx)-1)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (-2*Sqrt[Cos[e + f*x]]*Hypergeometric2F1[-3/2, -3/2, -1/2, 2*Sin[(e + f*x)/
2]^2]*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(3*c^2*f*(-1 + Cos[e + f
*x])^2)
```

fricas [A] time = 0.55, size = 339, normalized size = 3.26

$$\left[\frac{3\sqrt{-a}\left(\cos\left(fx+e\right)-1\right)\log\left(-\frac{8a\cos\left(fx+e\right)^3-4\left(2\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)-7a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)+1}\right)\sin\left(f\right.}{6\left(c^2f\cos\left(fx+e\right)-c^2f\right)\sin\left(fx+e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/6*(3*sqrt(-a)*(cos(f*x + e) - 1)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x
 + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*si
n(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*(4*
cos(f*x + e)^2 - 3*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/(
(c^2*f*cos(f*x + e) - c^2*f)*sin(f*x + e)), 1/3*(3*sqrt(a)*(cos(f*x + e) -
1)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*si
n(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*(4*c
os(f*x + e)^2 - 3*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((
c^2*f*cos(f*x + e) - c^2*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)4*sqrt(2)*(1/12*(-9*
a*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)
)))^4+12*a^2*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^2-7*a^3*sqrt(-a))/c^2/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-s
qrt(-a)*tan(1/2*(f*x+exp(1))))^2-a)^3-1/4*a*sqrt(-a)*ln(abs(2*(sqrt(-a*tan(
1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6
*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))
))^2+4*sqrt(2)*abs(a)-6*a))/sqrt(2)/c^2/abs(a))*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 1.68, size = 214, normalized size = 2.06

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-3\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{2}\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+3\sqrt{2}\,\mathrm{s}\cdots\right.}{3c^2 f\sin\left(fx+e\right)\left(-1+\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^2,x)
```

```
[Out] 1/3/c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-3*cos(f*x+e)*sin(f*x+e)*2^(
1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+3*2^(1/2)*sin(f*x+e)*arctanh
(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+8*cos(f*x+e)^2-6*cos(f*x+e))/sin(f*x+e)/
(-1+cos(f*x+e))
```

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

$$\int \frac{\sqrt{a\sec\left(fx+e\right)+a}}{\left(c\sec\left(fx+e\right)-c\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sec(f*x + e) + a)/(c*sec(f*x + e) - c)^2, x)
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^2, x)
```

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

$$\frac{\int \frac{\sqrt{a\sec\left(e+fx\right)+a}}{\sec^2\left(e+fx\right)-2\sec\left(e+fx\right)+1}\,dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e))**2,x)
```

```
[Out] Integral(sqrt(a*sec(e + f*x) + a)/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1), x
)/c**2
```

3.48 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=139

$$\frac{2\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5a^2c^3f}-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3ac^3f}+\frac{2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^3f}+\dots$$

```
[Out] -2/3*cot(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a/c^3/f+2/5*cot(f*x+e)^5*(a+a*sec(
f*x+e))^(5/2)/a^2/c^3/f+2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))
*a^(1/2)/c^3/f+2*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/c^3/f
```

Rubi [A] time = 0.17, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 325, 203}

$$\frac{2\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5a^2c^3f}-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3ac^3f}+\frac{2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^3f}+\dots$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^3*f)
 + (2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^3*f) - (2*Cot[e + f*x]^3*(a
 + a*Sec[e + f*x])^(3/2))/(3*a*c^3*f) + (2*Cot[e + f*x]^5*(a + a*Sec[e + f*
x])^(5/2))/(5*a^2*c^3*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 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 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^3}\,dx = -\frac{\int \cot^6(e+fx)(a+a\sec(e+fx))^{7/2}\,dx}{a^3c^3}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \frac{1}{x^6(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^2c^3f}$$

$$= \frac{2\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5a^2c^3f} - \frac{2\,\mathrm{Subst}\left(\int \frac{1}{x^4(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{ac^3f}$$

$$= -\frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3ac^3f} + \frac{2\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5a^2c^3f} + \frac{2\,\mathrm{Sub}}{}$$

$$= \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^3f} - \frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3ac^3f} + \frac{2\cot^5(e+}{}$$

$$= \frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^3f} + \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^3f} - \frac{2\cot^3(e+fx)(a+}{3ac^3}$$

Mathematica [C] time = 0.26, size = 78, normalized size = 0.56

$$-\frac{2\sqrt{\cos(e+fx)}\,\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\;{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};2\sin^2\left(\frac{1}{2}(e+fx)\right)\right)}{5c^3f(\cos(e+fx)-1)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (-2*Sqrt[Cos[e + f*x]]*Hypergeometric2F1[-5/2, -5/2, -3/2, 2*Sin[(e + f*x)/
2]^2]*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(5*c^3*f*(-1 + Cos[e + f
*x])^3)
```

fricas [A] time = 0.58, size = 405, normalized size = 2.91

$$\left[\frac{15\left(\cos\left(fx+e\right)^2-2\,\cos\left(fx+e\right)+1\right)\sqrt{-a}\,\log\left(-\frac{8\,a\cos\left(fx+e\right)^3-4\left(2\,\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)-7}{\cos\left(fx+e\right)+1}\right.}{30\left(c^3f\cos\left(fx+e\right)^2-2\,c^3f\cos\left(fx\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/30*(15*(cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sqrt(-a)*log(-(8*a*cos(f*x
+ e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e)
+ a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))
*sin(f*x + e) + 4*(23*cos(f*x + e)^3 - 35*cos(f*x + e)^2 + 15*cos(f*x + e))
*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((c^3*f*cos(f*x + e)^2 - 2*c^3*f*
cos(f*x + e) + c^3*f)*sin(f*x + e)), 1/15*(15*(cos(f*x + e)^2 - 2*cos(f*x +
 e) + 1)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*c
os(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x
```

```
 + e) + 2*(23*cos(f*x + e)^3 - 35*cos(f*x + e)^2 + 15*cos(f*x + e))*sqrt((a
*cos(f*x + e) + a)/cos(f*x + e)))/((c^3*f*cos(f*x + e)^2 - 2*c^3*f*cos(f*x
+ e) + c^3*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)-4*sqrt(2)*(1/120*(1
05*a*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp
(1))))^8-300*a^2*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(
1/2*(f*x+exp(1))))^6+430*a^3*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-s
qrt(-a)*tan(1/2*(f*x+exp(1))))^4-260*a^4*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp
(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+73*a^5*sqrt(-a))/c^3/((sqrt(-a
*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-a)^5+1/4*a*sq
rt(-a)*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+e
xp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-
sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/sqrt(2)/c^3/abs(a)
)*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 1.90, size = 311, normalized size = 2.24

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(1+\cos\left(fx+e\right)\right)\left(15\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}}{2\cos\left(f\right.}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/15/c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(1+cos(f*x+e))*(15*sin(f*x+e
)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-30*cos(f*x
+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+15*2^(1/2)
*sin(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos
(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)-46*cos(f*x+e)^3+70*co
s(f*x+e)^2-30*cos(f*x+e))/sin(f*x+e)^3/(-1+cos(f*x+e))
```

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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^3,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^3, x)
```

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

$$-\frac{\int \frac{\sqrt{a\sec\left(e+fx\right)+a}}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e))**3,x)
```

```
[Out] -Integral(sqrt(a*sec(e + f*x) + a)/(sec(e + f*x)**3 - 3*sec(e + f*x)**2 + 3
*sec(e + f*x) - 1), x)/c**3
```

3.49 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^4}\,dx$

Optimal. Leaf size=174

$$-\frac{2\cot^7(e+fx)(a\sec(e+fx)+a)^{7/2}}{7a^3c^4f}+\frac{2\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5a^2c^4f}-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3}}{3ac^4f}$$

```
[Out] -2/3*cot(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a/c^4/f+2/5*cot(f*x+e)^5*(a+a*sec(
f*x+e))^(5/2)/a^2/c^4/f-2/7*cot(f*x+e)^7*(a+a*sec(f*x+e))^(7/2)/a^3/c^4/f+2
*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/c^4/f+2*cot(f*x+
e)*(a+a*sec(f*x+e))^(1/2)/c^4/f
```

Rubi [A] time = 0.18, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 325, 203}

$$-\frac{2\cot^7(e+fx)(a\sec(e+fx)+a)^{7/2}}{7a^3c^4f}+\frac{2\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5a^2c^4f}-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3}}{3ac^4f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^4*f)
 + (2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^4*f) - (2*Cot[e + f*x]^3*(a
 + a*Sec[e + f*x])^(3/2))/(3*a*c^4*f) + (2*Cot[e + f*x]^5*(a + a*Sec[e + f*
x])^(5/2))/(5*a^2*c^4*f) - (2*Cot[e + f*x]^7*(a + a*Sec[e + f*x])^(7/2))/(7
*a^3*c^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 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 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
```

```
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^4}\,dx = \frac{\int \cot^8(e+fx)(a+a\sec(e+fx))^{9/2}\,dx}{a^4c^4}$$
$$= -\frac{2\,\text{Subst}\left(\int \frac{1}{x^8(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^3c^4f}$$
$$= -\frac{2\cot^7(e+fx)(a+a\sec(e+fx))^{7/2}}{7a^3c^4f} + \frac{2\,\text{Subst}\left(\int \frac{1}{x^6(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^2c^4f}$$
$$= \frac{2\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5a^2c^4f} - \frac{2\cot^7(e+fx)(a+a\sec(e+fx))^{7/2}}{7a^3c^4f} - \frac{2\,\text{Subst}}{}$$
$$= -\frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3ac^4f} + \frac{2\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5a^2c^4f} - \frac{2\cot^7}{}$$
$$= \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^4f} - \frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3ac^4f} + \frac{2\cot^5(e+}{}$$
$$= \frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^4f} + \frac{2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^4f} - \frac{2\cot^3(e+fx)(a+}{3ac^4}$$

Mathematica [C] time = 0.24, size = 78, normalized size = 0.45

$$-\frac{2\sqrt{\cos(e+fx)}\,\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\;{}_2F_1\left(-\frac{7}{2},-\frac{7}{2};-\frac{5}{2};2\sin^2\left(\frac{1}{2}(e+fx)\right)\right)}{7c^4f(\cos(e+fx)-1)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (-2*Sqrt[Cos[e + f*x]]*Hypergeometric2F1[-7/2, -7/2, -5/2, 2*Sin[(e + f*x)/
2]^2]*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(7*c^4*f*(-1 + Cos[e + f
*x])^4)
```

fricas [A] time = 0.64, size = 475, normalized size = 2.73

$$\left[\frac{105\left(\cos\left(fx+e\right)^3-3\cos\left(fx+e\right)^2+3\cos\left(fx+e\right)-1\right)\sqrt{-a}\log\left(-\frac{8a\cos\left(fx+e\right)^3-4\left(2\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-a}\sqrt{\frac{a}{}}}{\cos\left(fx+e\right)+1}\right.}{210\left(c^4f\cos\left(fx+e\right)^3-3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] [1/210*(105*(cos(f*x + e)^3 - 3*cos(f*x + e)^2 + 3*cos(f*x + e) - 1)*sqrt(-
a)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*
```

```
sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x + e) + a
)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*(176*cos(f*x + e)^4 - 406*cos(f*x +
e)^3 + 350*cos(f*x + e)^2 - 105*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos
(f*x + e)))/((c^4*f*cos(f*x + e)^3 - 3*c^4*f*cos(f*x + e)^2 + 3*c^4*f*cos(f
*x + e) - c^4*f)*sin(f*x + e)), 1/105*(105*(cos(f*x + e)^3 - 3*cos(f*x + e)
^2 + 3*cos(f*x + e) - 1)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)
/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x +
e) - a))*sin(f*x + e) + 2*(176*cos(f*x + e)^4 - 406*cos(f*x + e)^3 + 350*co
s(f*x + e)^2 - 105*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/(
(c^4*f*cos(f*x + e)^3 - 3*c^4*f*cos(f*x + e)^2 + 3*c^4*f*cos(f*x + e) - c^4
*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)4*sqrt(2)*(1/1680*(-
1575*a*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+e
xp(1))))^12+7140*a^2*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*
tan(1/2*(f*x+exp(1))))^10-16415*a^3*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))
^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^8+19880*a^4*sqrt(-a)*(sqrt(-a*tan(1/2
*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6-14637*a^5*sqrt(-a)*(s
qrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4+5684*a^
6*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)
)))^2-1037*a^7*sqrt(-a))/c^4/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*
tan(1/2*(f*x+exp(1))))^2-a)^7-1/4*a*sqrt(-a)*ln(abs(2*(sqrt(-a*tan(1/2*(f*x
+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(
2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*s
qrt(2)*abs(a)-6*a))/sqrt(2)/c^4/abs(a))*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 2.20, size = 402, normalized size = 2.31

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(1+\cos\left(fx+e\right)\right)^{2}\left(-105\left(\cos^{3}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx}{1+\cos(f}}}{2\,c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^4,x)
```

```
[Out] 1/105/c^4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(1+cos(f*x+e))^2*(-105*cos(
f*x+e)^3*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/
2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+315*s
in(f*x+e)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh
(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-31
5*cos(f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctan
```

```
h(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+3
52*cos(f*x+e)^4+105*2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^
(1/2)-812*cos(f*x+e)^3+700*cos(f*x+e)^2-210*cos(f*x+e))/sin(f*x+e)^5/(-1+co
s(f*x+e))
```

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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^4,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^4, x)
```

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

$$\frac{\int \frac{\sqrt{a \sec{\left(e + f x \right)} + a}}{\sec^{4}{\left(e + f x \right)} - 4 \sec^{3}{\left(e + f x \right)} + 6 \sec^{2}{\left(e + f x \right)} - 4 \sec{\left(e + f x \right)} + 1}\, dx}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e))**4,x)
```

```
[Out] Integral(sqrt(a*sec(e + f*x) + a)/(sec(e + f*x)**4 - 4*sec(e + f*x)**3 + 6*
sec(e + f*x)**2 - 4*sec(e + f*x) + 1), x)/c**4
```

3.50 $\int (a + a\sec(e + fx))^{3/2}(c - c\sec(e + fx))^3\,dx$

Optimal. Leaf size=177

$$\frac{2a^{3/2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2a^5c^3\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}-\frac{2a^4c^3\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^3c^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}-\frac{}{f}$$

```
[Out] 2*a^(3/2)*c^3*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f-2*a^2*c^3
*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a^3*c^3*tan(f*x+e)^3/f/(a+a*sec(f*
x+e))^(3/2)-2/5*a^4*c^3*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)-2/7*a^5*c^3*t
an(f*x+e)^7/f/(a+a*sec(f*x+e))^(7/2)
```

Rubi [A] time = 0.18, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3904, 3887, 459, 302, 203}

$$-\frac{2a^5c^3\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}-\frac{2a^4c^3\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^3c^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2a^{3/2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(3/2)*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f -
 (2*a^2*c^3*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^3*c^3*Tan[e +
 f*x]^3)/(3*f*(a + a*Sec[e + f*x])^(3/2)) - (2*a^4*c^3*Tan[e + f*x]^5)/(5*f
*(a + a*Sec[e + f*x])^(5/2)) - (2*a^5*c^3*Tan[e + f*x]^7)/(7*f*(a + a*Sec[e
 + f*x])^(7/2))
```

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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^3\,dx = -\left(\left(a^3c^3\right)\int \frac{\tan^6(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx\right)$$

$$= \frac{\left(2a^5c^3\right)\text{Subst}\left(\int \frac{x^6\left(2+ax^2\right)}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= -\frac{2a^5c^3\tan^7(e+fx)}{7f(a+a\sec(e+fx))^{7/2}} + \frac{\left(2a^5c^3\right)\text{Subst}\left(\int \frac{x^6}{1+ax^2}\,dx, x, -\frac{\tan}{\sqrt{a+a}}\right.}{f}$$

$$= -\frac{2a^5c^3\tan^7(e+fx)}{7f(a+a\sec(e+fx))^{7/2}} + \frac{\left(2a^5c^3\right)\text{Subst}\left(\int\left(\frac{1}{a^3}-\frac{x^2}{a^2}+\frac{x^4}{a}-\frac{}{a^3}\right.\right.}{f}$$

$$= -\frac{2a^2c^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^3c^3\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{2a^4c^3\tan}{5f(a+a\,\text{se}}$$

$$= \frac{2a^{3/2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} - \frac{2a^2c^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^3c^3}{3f(a+}$$

Mathematica [A] time = 0.95, size = 122, normalized size = 0.69

$$\frac{ac^3\tan\left(\frac{1}{2}(e+fx)\right)\sec^3(e+fx)\sqrt{a(\sec(e+fx)+1)}\left((-171\cos(e+fx)+32\cos(2(e+fx))-73\cos(3(e+fx))\right.}{105f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (a*c^3*(210*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^3 + (2 - 171*Cos[e
 + f*x] + 32*Cos[2*(e + f*x)] - 73*Cos[3*(e + f*x)])*Sqrt[-1 + Sec[e + f*x]
])*Sec[e + f*x]^3*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(105*f*Sqrt[
-1 + Sec[e + f*x]])
```

fricas [A] time = 0.48, size = 385, normalized size = 2.18

$$\left[\frac{105\left(ac^3\cos\left(fx+e\right)^4+ac^3\cos\left(fx+e\right)^3\right)\sqrt{-a}\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right.}{105\left(f\cos\left(fx+e\right)^4\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/105*(105*(a*c^3*cos(f*x + e)^4 + a*c^3*cos(f*x + e)^3)*sqrt(-a)*log((2*a
*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*
x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(146*a*c^
3*cos(f*x + e)^3 - 32*a*c^3*cos(f*x + e)^2 - 24*a*c^3*cos(f*x + e) + 15*a*c
^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^4
 + f*cos(f*x + e)^3), -2/105*(105*(a*c^3*cos(f*x + e)^4 + a*c^3*cos(f*x + e
)^3)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(s
qrt(a)*sin(f*x + e))) + (146*a*c^3*cos(f*x + e)^3 - 32*a*c^3*cos(f*x + e)^2
 - 24*a*c^3*cos(f*x + e) + 15*a*c^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)
)*sin(f*x + e))/(f*cos(f*x + e)^4 + f*cos(f*x + e)^3)]
```

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((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^3,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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
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able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)-2*(2*(((77/30*sqrt(2)*a^5*c^3*sign(cos(f*x+exp(1)))-139/210*sqrt(2)*
a^5*c^3*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1)))^2)*tan(1/2*(f*x+exp(1))
)^2-11/6*sqrt(2)*a^5*c^3*sign(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2+1/2
*sqrt(2)*a^5*c^3*sign(cos(f*x+exp(1))))/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/
(-a*tan(1/2*(f*x+exp(1)))^2+a)^3*tan(1/2*(f*x+exp(1)))+1/2*a^2*sqrt(-a)*c^3
*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a
)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*
x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/ab
s(a))/f
```

maple [B] time = 2.33, size = 392, normalized size = 2.21

$$c^3\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(105\,\mathrm{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{7}{2}}\left(\cos^3\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}+3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/840*c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(105*arctanh(1/2*(-2*cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(7/2)*cos(f*x+e)^3*sin(f*x+e)*2^(1/2)+315*arctanh(1/2*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)
/(1+cos(f*x+e)))^(7/2)*cos(f*x+e)^2*sin(f*x+e)*2^(1/2)+315*arctanh(1/2*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(7/2)*cos(f*x+e)*sin(f*x+e)*2^(1/2)+105*2^(1/2)*arctanh
(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-
```

```
2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*sin(f*x+e)+2336*cos(f*x+e)^4-2848*cos(f*
x+e)^3+128*cos(f*x+e)^2+624*cos(f*x+e)-240)/cos(f*x+e)^3/sin(f*x+e)*a
```

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((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^3,x)
[Out] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^3, x)
```

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

$$-c^3\left(\int \left(-a\sqrt{a\sec\left(e+fx\right)+a}\right)dx+\int 2a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)dx+\int \left(-2a\sqrt{a\sec\left(e+fx\right)+a}\,\mathrm{s}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)*(c-c*sec(f*x+e))**3,x)
[Out] -c**3*(Integral(-a*sqrt(a*sec(e + f*x) + a), x) + Integral(2*a*sqrt(a*sec(e
 + f*x) + a)*sec(e + f*x), x) + Integral(-2*a*sqrt(a*sec(e + f*x) + a)*sec(
e + f*x)**3, x) + Integral(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**4, x))
```

3.51 $\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^2\,dx$

Optimal. Leaf size=142

$$\frac{2a^{3/2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2a^4c^2\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^3c^2\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}-\frac{2a^2c^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*a^(3/2)*c^2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f-2*a^2*c^2
*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a^3*c^2*tan(f*x+e)^3/f/(a+a*sec(f*
x+e))^(3/2)+2/5*a^4*c^2*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.17, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3904, 3887, 459, 302, 203}

$$\frac{2a^4c^2\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^3c^2\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2a^{3/2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2a^2c^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(3/2)*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f -
 (2*a^2*c^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^3*c^2*Tan[e +
 f*x]^3)/(3*f*(a + a*Sec[e + f*x])^(3/2)) + (2*a^4*c^2*Tan[e + f*x]^5)/(5*f
*(a + a*Sec[e + f*x])^(5/2))
```

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 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
```

```
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] && !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^2\,dx = \left(a^2c^2\right)\int \frac{\tan^4(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx$$

$$= -\frac{\left(2a^4c^2\right)\text{Subst}\left(\int \frac{x^4(2+ax^2)}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= \frac{2a^4c^2\tan^5(e+fx)}{5f(a+a\sec(e+fx))^{5/2}} - \frac{\left(2a^4c^2\right)\text{Subst}\left(\int \frac{x^4}{1+ax^2}\,dx, x, -\frac{\tan(e}{\sqrt{a+a\,\text{se}}}\right.}{f}$$

$$= \frac{2a^4c^2\tan^5(e+fx)}{5f(a+a\sec(e+fx))^{5/2}} - \frac{\left(2a^4c^2\right)\text{Subst}\left(\int\left(-\frac{1}{a^2}+\frac{x^2}{a}+\frac{1}{a^2(1+ax}\right.\right.}{f}$$

$$= -\frac{2a^2c^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^3c^2\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} + \frac{2a^4c^2\tan}{5f(a+a\,\text{se}}$$

$$= \frac{2a^{3/2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} - \frac{2a^2c^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^3c^2}{3f(a+}$$

Mathematica [A] time = 0.91, size = 112, normalized size = 0.79

$$-\frac{ac^2\tan\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\,\left((2\cos(e+fx)+17\cos(2(e+fx))+11)\sqrt{\sec(e+fx)-1}\right.}{15f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] -1/15*(a*c^2*(-30*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^2 + (11 + 2*
Cos[e + f*x] + 17*Cos[2*(e + f*x)])*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]^2
*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(f*Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.46, size = 355, normalized size = 2.50

$$\left[\frac{15\left(ac^2\cos\left(fx+e\right)^3+ac^2\cos\left(fx+e\right)^2\right)\sqrt{-a}\log\left(\frac{2a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)}{15\left(f\cos\left(fx+e\right)^3+f\cos\left(fx+e\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/15*(15*(a*c^2*cos(f*x + e)^3 + a*c^2*cos(f*x + e)^2)*sqrt(-a)*log((2*a*c
os(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
```

```
+ e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(17*a*c^2*c
os(f*x + e)^2 + a*c^2*cos(f*x + e) - 3*a*c^2)*sqrt((a*cos(f*x + e) + a)/cos
(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^2), -2/15*(15*(
a*c^2*cos(f*x + e)^3 + a*c^2*cos(f*x + e)^2)*sqrt(a)*arctan(sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (17*a*c^2*c
os(f*x + e)^2 + a*c^2*cos(f*x + e) - 3*a*c^2)*sqrt((a*cos(f*x + e) + a)/cos
(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^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((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^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: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
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(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
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to check sign: (4*pi/x/2)>(-4*pi/x/2)2*(2*((4/3*sqrt(2)*a^4*c^2*sign(cos(f*
x+exp(1)))-13/30*sqrt(2)*a^4*c^2*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1))
)^2)*tan(1/2*(f*x+exp(1)))^2-1/2*sqrt(2)*a^4*c^2*sign(cos(f*x+exp(1))))/sqr
t(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^2*tan(1/2*(f
*x+exp(1)))-1/2*a^2*sqrt(-a)*c^2*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*ta
n(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)
-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1
))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [A] time = 1.84, size = 232, normalized size = 1.63

$$\frac{c^{2}\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(15\,\mathrm{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}+15\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^2,x)
```

```
[Out] 1/30*c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(15*arctanh(1/2*(-2*cos(f*x+
e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(3/2)*sin(f*x+e)*cos(f*x+e)^2*2^(1/2)+15*sin(f*x+e)*cos(f*x+e)*
arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1
/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*2^(1/2)+68*cos(f*x+e)^3-64*cos(f*
x+e)^2-16*cos(f*x+e)+12)/cos(f*x+e)^2/sin(f*x+e)*a
```

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((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^2, x)
```

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

$$c^{2}\left(\int a\sqrt{a\sec\left(e+fx\right)+a}\,dx+\int\left(-a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)\right)dx+\int\left(-a\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)*(c-c*sec(f*x+e))**2,x)
```

```
[Out] c**2*(Integral(a*sqrt(a*sec(e + f*x) + a), x) + Integral(-a*sqrt(a*sec(e +
f*x) + a)*sec(e + f*x), x) + Integral(-a*sqrt(a*sec(e + f*x) + a)*sec(e + f
*x)**2, x) + Integral(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**3, x))
```

3.52 $\int (a + a\sec(e + fx))^{3/2}(c - c\sec(e + fx))\,dx$

Optimal. Leaf size=101

$$\frac{2a^{3/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f} - \frac{2a^3c\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}} - \frac{2a^2c\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*a^(3/2)*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f-2*a^2*c*tan
(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2/3*a^3*c*tan(f*x+e)^3/f/(a+a*sec(f*x+e))^
(3/2)
```

Rubi [A] time = 0.12, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {3904, 3887, 459, 321, 203}

$$-\frac{2a^3c\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}} + \frac{2a^{3/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f} - \frac{2a^2c\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*a^(3/2)*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f - (
2*a^2*c*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) - (2*a^3*c*Tan[e + f*x]^
3)/(3*f*(a + a*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 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 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))\,dx = -\left((ac)\int \sqrt{a+a\sec(e+fx)}\,\tan^2(e+fx)\,dx\right)$$
$$= \frac{\left(2a^3c\right)\text{Subst}\left(\int \frac{x^2\left(2+ax^2\right)}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{2a^3c\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} + \frac{\left(2a^3c\right)\text{Subst}\left(\int \frac{x^2}{1+ax^2}\,dx, x, -\frac{\tan(e}{\sqrt{a+a\,\text{se}}}\right.}{f}$$
$$= -\frac{2a^2c\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2a^3c\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{\left(2a^2c\right)\text{Subst}}{}$$
$$= \frac{2a^{3/2}c\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} - \frac{2a^2c\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2a^3c\,\text{ta}}{3f(a+a\,\text{s}}$$

Mathematica [A] time = 0.68, size = 96, normalized size = 0.95

$$-\frac{2ac\tan\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{a(\sec(e+fx)+1)}\left((2\cos(e+fx)+1)\sqrt{\sec(e+fx)-1}-3\cos(e+fx)\tan^{-1}\right.}{3f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x]),x]
```

```
[Out] (-2*a*c*(-3*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x] + (1 + 2*Cos[e + f
*x])*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(
e + f*x)/2])/(3*f*Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.46, size = 303, normalized size = 3.00

$$\left[\frac{3\left(ac\cos\left(fx+e\right)^2+ac\cos\left(fx+e\right)\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)-2}{3\left(f\cos\left(fx+e\right)^2+f\cos\left(fx+e\right)\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(a*c*cos(f*x + e)^2 + a*c*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x +
 e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(2*a*c*cos(f*x + e)
 + a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x +
```

```
e)^2 + f*cos(f*x + e)), -2/3*(3*(a*c*cos(f*x + e)^2 + a*c*cos(f*x + e))*sqr
t(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*s
in(f*x + e))) + (2*a*c*cos(f*x + e) + a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*
x + e))*sin(f*x + e))/(f*cos(f*x + e)^2 + f*cos(f*x + e))]
```

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((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e)),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: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)-2*(2*(
1/2*sqrt(2)*a^3*c*sign(cos(f*x+exp(1)))-1/6*sqrt(2)*a^3*c*sign(cos(f*x+exp(
1)))*tan(1/2*(f*x+exp(1)))^2)/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/
2*(f*x+exp(1)))^2+a)*tan(1/2*(f*x+exp(1)))+1/2*a^2*sqrt(-a)*c*sign(cos(f*x+
exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x
+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a
)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.43, size = 212, normalized size = 2.10

$$\frac{c\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(3\sin\left(fx+e\right)\cos\left(fx+e\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sqrt{2}+3\sqrt{2}\ a}{6f\cos\left(fx+e\right)\ s}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e)),x)
```

```
[Out] 1/6*c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(3*sin(f*x+e)*cos(f*x+e)*arctan
h(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*2^(1/2)+3*2^(1/2)*arctanh(1/2*(-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(3/2)*sin(f*x+e)+8*cos(f*x+e)^2-4*cos(f*x+e)-4)/cos(f*x+e)/s
in(f*x+e)*a
```

maxima [B] time = 0.82, size = 998, normalized size = 9.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*((a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*
e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))*sin(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
```

```
*x + 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e)
 + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e)))) + 1) - a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*co
s(2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(
2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
 + 1))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))) - 1) - a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2
*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e) + 1)), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x
 + 2*e) + 1)^(1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))
 + 1) + a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x +
2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)), (
cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*cos
(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - 1))*(cos(2*f*x + 2*
e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*sqrt(a) + 4*(a*co
s(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) - (a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) - a)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1
)))*sqrt(a))*c/((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*
e) + 1)^(1/4)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x)), x)
```

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

$$-c\left(\int \left(-a\sqrt{a\sec\left(e+fx\right)+a}\right)dx+\int a\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{2}\left(e+fx\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)*(c-c*sec(f*x+e)),x)
```

```
[Out] -c*(Integral(-a*sqrt(a*sec(e + f*x) + a), x) + Integral(a*sqrt(a*sec(e + f*
x) + a)*sec(e + f*x)**2, x))
```

3.53 $\int \frac{(a+a\sec(e+fx))^{3/2}}{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=70

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}+\frac{4a\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{cf}$$

```
[Out] 2*a^(3/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c/f+4*a*cot(f*x
+e)*(a+a*sec(f*x+e))^(1/2)/c/f
```

Rubi [A] time = 0.16, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 453, 203}

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}+\frac{4a\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{cf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*a^(3/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c*f) +
 (4*a*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c*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 453

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(c*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*e*(m + 1)),
 x] + Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(a*e^n*(m + 1)), Int[(e*
x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b*c
 - a*d, 0] && (IntegerQ[n] || GtQ[e, 0]) && ((GtQ[n, 0] && LtQ[m, -1]) || (
LtQ[n, 0] && GtQ[m + n, -1])) && !ILtQ[p, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] && !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{c-c\sec(e+fx)}\,dx = -\frac{\int \cot^2(e+fx)(a+a\sec(e+fx))^{5/2}\,dx}{ac}$$
$$= \frac{(2a)\operatorname{Subst}\left(\int \frac{2+ax^2}{x^2(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf}$$
$$= \frac{4a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{cf} - \frac{(2a^2)\operatorname{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf}$$
$$= \frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} + \frac{4a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{cf}$$

Mathematica [A] time = 0.58, size = 93, normalized size = 1.33

$$\frac{2a^2\tan(e+fx)\sec(e+fx)\left(2\cos(e+fx)\sqrt{\sec(e+fx)-1}-(\cos(e+fx)-1)\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)\right)}{cf(\sec(e+fx)-1)^{3/2}\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*a^2*(-(ArcTan[Sqrt[-1 + Sec[e + f*x]]]*(-1 + Cos[e + f*x])) + 2*Cos[e +
f*x]*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]*Tan[e + f*x])/(c*f*(-1 + Sec[e +
 f*x])^(3/2)*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 0.54, size = 269, normalized size = 3.84

$$\left[\frac{\sqrt{-a}\,a\log\left(-\frac{8a\cos(fx+e)^3-4\left(2\cos(fx+e)^2-\cos(fx+e)\right)\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sin(fx+e)-7a\cos(fx+e)+a}{\cos(fx+e)+1}\right)\sin(fx+e)+8a\sqrt{\frac{a\cos(}{\cos(}}}{2cf\sin(fx+e)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(-a)*a*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x +
 e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*co
s(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 8*a*sqrt((a*cos(f*x + e)
 + a)/cos(f*x + e))*cos(f*x + e))/(c*f*sin(f*x + e)), (a^(3/2)*arctan(2*sqr
t(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a
*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 4*a*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*cos(f*x + e))/(c*f*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)-16*sqrt(2)*a^2*sqrt
(-a)*a*(1/16*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))
^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/sqrt(2)/a/c/
abs(a)+1/4/a/c/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+e
xp(1))))^2-a))*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 1.37, size = 194, normalized size = 2.77

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(\left(\cos^2\left(fx+e\right)\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{2}-\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \text{ar}}{cf\left(-1+\cos^2\left(fx+e\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -1/c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)^2*(-2*cos(f*x+e)/(1+
cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x
+e)/cos(f*x+e)*2^(1/2))*2^(1/2)-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctan
h(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*2
^(1/2)+4*sin(f*x+e)*cos(f*x+e))/(-1+cos(f*x+e)^2)*a
```

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

$$-\int\frac{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{c\sec\left(fx+e\right)-c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -integrate((a*sec(f*x + e) + a)^(3/2)/(c*sec(f*x + e) - c), x)
```

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

$$\int\frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{c-\frac{c}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x)), x)
```

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

$$-\frac{\int\frac{a\sqrt{a\sec\left(e+fx\right)+a}}{\sec\left(e+fx\right)-1}\,dx+\int\frac{a\sqrt{a\sec\left(e+fx\right)+a}\sec\left(e+fx\right)}{\sec\left(e+fx\right)-1}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -(Integral(a*sqrt(a*sec(e + f*x) + a)/(sec(e + f*x) - 1), x) + Integral(a*s
qrt(a*sec(e + f*x) + a)*sec(e + f*x)/(sec(e + f*x) - 1), x))/c
```

3.54 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=102

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^2f}-\frac{4\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3c^2f}+\frac{2a\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^2f}$$

```
[Out] 2*a^(3/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c^2/f-4/3*cot(f
*x+e)^3*(a+a*sec(f*x+e))^(3/2)/c^2/f+2*a*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/
c^2/f
```

Rubi [A] time = 0.16, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3904, 3887, 453, 325, 203}

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^2f}-\frac{4\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3c^2f}+\frac{2a\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(3/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^2*f)
 + (2*a*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^2*f) - (4*Cot[e + f*x]^3*
(a + a*Sec[e + f*x])^(3/2))/(3*c^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 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 453

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(c*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*e*(m + 1)),
 x] + Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(a*e^n*(m + 1)), Int[(e*
x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b*c
 - a*d, 0] && (IntegerQ[n] || GtQ[e, 0]) && ((GtQ[n, 0] && LtQ[m, -1]) || (
LtQ[n, 0] && GtQ[m + n, -1])) &&  !ILtQ[p, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^2}\,dx = \frac{\int \cot^4(e+fx)(a+a\sec(e+fx))^{7/2}\,dx}{a^2c^2}$$

$$= -\frac{2\,\text{Subst}\left(\int \frac{2+ax^2}{x^4(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f}$$

$$= -\frac{4\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^2f} + \frac{(2a)\,\text{Subst}\left(\int \frac{1}{x^2(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f}$$

$$= \frac{2a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^2f} - \frac{4\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^2f} - \frac{(2a^2)\,\text{S}}{}$$

$$= \frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f} + \frac{2a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^2f} - \frac{4\cot^3(e+fx)(a}{3}$$

Mathematica [A] time = 0.64, size = 113, normalized size = 1.11

$$-\frac{2a\sqrt{\cos(e+fx)}\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(\sqrt{\cos(e+fx)}(5\cos(e+fx)-3)-6\sqrt{2}\sin^{-1}\left(\sqrt{2}\sin\left(\right.\right.\right.}{3c^2f(\cos(e+fx)-1)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (-2*a*Sqrt[Cos[e + f*x]]*Sqrt[a*(1 + Sec[e + f*x])]*(Sqrt[Cos[e + f*x]]*(-3
 + 5*Cos[e + f*x]) - 6*Sqrt[2]*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]]*Sin[(e + f*
x)/2]^3)*Tan[(e + f*x)/2])/(3*c^2*f*(-1 + Cos[e + f*x])^2)
```

fricas [A] time = 0.55, size = 351, normalized size = 3.44

$$\left[\frac{3\left(a\cos\left(fx+e\right)-a\right)\sqrt{-a}\,\log\left(-\frac{8\,a\cos\left(fx+e\right)^3-4\left(2\,\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)-7\,a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)+1}\right)\sin\left(\right.}{6\left(c^2f\cos\left(fx+e\right)-c^2f\right)\sin\left(fx+e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/6*(3*(a*cos(f*x + e) - a)*sqrt(-a)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f
*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*
sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*(
5*a*cos(f*x + e)^2 - 3*a*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x +
```

```
e)))/((c^2*f*cos(f*x + e) - c^2*f)*sin(f*x + e)), 1/3*(3*(a*cos(f*x + e) -
a)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
 + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e)
+ 2*(5*a*cos(f*x + e)^2 - 3*a*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f
*x + e)))/((c^2*f*cos(f*x + e) - c^2*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^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: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
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able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)4*(1/196608*(-262144*a^4*sqrt(-a)*sign
(cos(f*x+exp(1)))-393216*a^2*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-s
qrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1)))+393216*a^3*sqrt(-a)*
(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(
cos(f*x+exp(1))))/sqrt(2)/c^2/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)
*tan(1/2*(f*x+exp(1))))^2-a)^3-1/4*a^2*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(ab
s(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4
*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan
(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c^2/abs(a))/f
```

maple [B] time = 1.55, size = 215, normalized size = 2.11

$$\frac{\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(-3\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{2}\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)+3\sqrt{2}\ \mathrm{s}\right.}{3c^2f\sin\left(fx+e\right)\left(-1+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^2,x)
```

```
[Out] 1/3/c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-3*cos(f*x+e)*sin(f*x+e)*2^(
1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+3*2^(1/2)*sin(f*x+e)*arctanh
(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+10*cos(f*x+e)^2-6*cos(f*x+e))/sin(f*x+e)
/(-1+cos(f*x+e))*a
```

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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^2, x)
```

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

$$\frac{\int \frac{a\sqrt{a\sec\left(e+fx\right)+a}}{\sec^2\left(e+fx\right)-2\sec\left(e+fx\right)+1}\,dx+\int \frac{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)}{\sec^2\left(e+fx\right)-2\sec\left(e+fx\right)+1}\,dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**2,x)
```

```
[Out] (Integral(a*sqrt(a*sec(e + f*x) + a)/(sec(e + f*x)**2 - 2*sec(e + f*x) + 1)
, x) + Integral(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)/(sec(e + f*x)**2 -
2*sec(e + f*x) + 1), x))/c**2
```

3.55 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=137

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^3f}+\frac{4\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5ac^3f}-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3c^3f}+\frac{2a\cot}{}$$

```
[Out] 2*a^(3/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c^3/f-2/3*cot(f
*x+e)^3*(a+a*sec(f*x+e))^(3/2)/c^3/f+4/5*cot(f*x+e)^5*(a+a*sec(f*x+e))^(5/2
)/a/c^3/f+2*a*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/c^3/f
```

Rubi [A] time = 0.18, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3904, 3887, 453, 325, 203}

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^3f}+\frac{4\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5ac^3f}-\frac{2\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3c^3f}+\frac{2a\cot}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(3/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^3*f)
 + (2*a*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^3*f) - (2*Cot[e + f*x]^3*
(a + a*Sec[e + f*x])^(3/2))/(3*c^3*f) + (4*Cot[e + f*x]^5*(a + a*Sec[e + f*
x])^(5/2))/(5*a*c^3*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 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 453

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(c*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*e*(m + 1)),
 x] + Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(a*e^n*(m + 1)), Int[(e*
x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b*c
 - a*d, 0] && (IntegerQ[n] || GtQ[e, 0]) && ((GtQ[n, 0] && LtQ[m, -1]) || (
LtQ[n, 0] && GtQ[m + n, -1])) &&  !ILtQ[p, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^3}\,dx = -\frac{\int \cot^6(e+fx)(a+a\sec(e+fx))^{9/2}\,dx}{a^3c^3}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \frac{2+ax^2}{x^6(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{ac^3f}$$

$$= \frac{4\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5ac^3f} - \frac{2\,\mathrm{Subst}\left(\int \frac{1}{x^4(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^3f}$$

$$= -\frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^3f} + \frac{4\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5ac^3f} + \frac{(2a)}{\cdots}$$

$$= \frac{2a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^3f} - \frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^3f} + \frac{4\cot^5(\cdots}{\cdots}$$

$$= \frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^3f} + \frac{2a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^3f} - \frac{2\cot^3(e+fx)(\cdots}{3\cdots}$$

Mathematica [C] time = 0.80, size = 102, normalized size = 0.74

$$\frac{2a\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(5(\cos(e+fx)-1)\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};2\sin^2\left(\frac{1}{2}(e+fx)\right)\right)+6\cos^{\frac{5}{2}}(e+fx)\cdots\right)}{15c^3f\cos^{\frac{5}{2}}(e+fx)(\sec(e+fx)-1)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*a*(6*Cos[e + f*x]^(5/2) + 5*(-1 + Cos[e + f*x])*Hypergeometric2F1[-3/2,
-3/2, -1/2, 2*Sin[(e + f*x)/2]^2])*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)
/2])/(15*c^3*f*Cos[e + f*x]^(5/2)*(-1 + Sec[e + f*x])^3)
```

fricas [A] time = 0.56, size = 417, normalized size = 3.04

$$\left[\frac{15\left(a\cos\left(fx+e\right)^2-2\,a\cos\left(fx+e\right)+a\right)\sqrt{-a}\,\log\left(-\frac{8\,a\cos\left(fx+e\right)^3-4\left(2\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sin\left(fx+e\cdots\right.}{\cos\left(fx+e\right)+1}\cdots\right.}{30\left(c^3f\cos\left(fx+e\right)^2-2\,c^3f\cos\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/30*(15*(a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a)*sqrt(-a)*log(-(8*a*cos(
f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) +
 1))*sin(f*x + e) + 4*(26*a*cos(f*x + e)^3 - 35*a*cos(f*x + e)^2 + 15*a*cos
(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((c^3*f*cos(f*x + e)^2
- 2*c^3*f*cos(f*x + e) + c^3*f)*sin(f*x + e)), 1/15*(15*(a*cos(f*x + e)^2 -
 2*a*cos(f*x + e) + a)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/c
os(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e)
 - a))*sin(f*x + e) + 2*(26*a*cos(f*x + e)^3 - 35*a*cos(f*x + e)^2 + 15*a*c
os(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((c^3*f*cos(f*x + e)^
2 - 2*c^3*f*cos(f*x + e) + c^3*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^3,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: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)-4*(1/4123168604160*(5222
680231936*a^6*sqrt(-a)*sign(cos(f*x+exp(1)))+8246337208320*a^2*sqrt(-a)*(sq
rt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^8*sign(cos
(f*x+exp(1)))-20615843020800*a^3*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+
a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))+31610959298560*a
^4*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1
))))^4*sign(cos(f*x+exp(1)))-17867063951360*a^5*sqrt(-a)*(sqrt(-a*tan(1/2*(
f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1))))/
sqrt(2)/c^3/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(
1))))^2-a)^5+1/4*a^2*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1
/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*
a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)))
)^2+4*sqrt(2)*abs(a)-6*a))/c^3/abs(a))/f
```

maple [B] time = 1.76, size = 304, normalized size = 2.22

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-15\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+30\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/15/c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-15*sin(f*x+e)*cos(f*x+e)^2
*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1
```

```
+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+30*cos(f*x+e)*sin(f*x+e)
*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-15*2^(1/2)*sin(f*x+e)*ar
ctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2
))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+52*cos(f*x+e)^3-70*cos(f*x+e)^2+30*
cos(f*x+e))/sin(f*x+e)/(-1+cos(f*x+e))^2*a
```

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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^3,x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^3, x)
```

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

$$-\frac{\int \frac{a\sqrt{a\sec\left(e+fx\right)+a}}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx+\int \frac{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)}{\sec^3\left(e+fx\right)-3\sec^2\left(e+fx\right)+3\sec\left(e+fx\right)-1}\,dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**3,x)
```

```
[Out] -(Integral(a*sqrt(a*sec(e + f*x) + a)/(sec(e + f*x)**3 - 3*sec(e + f*x)**2
+ 3*sec(e + f*x) - 1), x) + Integral(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x
)/(sec(e + f*x)**3 - 3*sec(e + f*x)**2 + 3*sec(e + f*x) - 1), x))/c**3
```

3.56 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^4}\,dx$

Optimal. Leaf size=172

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^4f}-\frac{4\cot^7(e+fx)(a\sec(e+fx)+a)^{7/2}}{7a^2c^4f}+\frac{2\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5ac^4f}-\frac{2\cot^3(}{}$$

```
[Out] 2*a^(3/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c^4/f-2/3*cot(f
*x+e)^3*(a+a*sec(f*x+e))^(3/2)/c^4/f+2/5*cot(f*x+e)^5*(a+a*sec(f*x+e))^(5/2
)/a/c^4/f-4/7*cot(f*x+e)^7*(a+a*sec(f*x+e))^(7/2)/a^2/c^4/f+2*a*cot(f*x+e)*
(a+a*sec(f*x+e))^(1/2)/c^4/f
```

Rubi [A] time = 0.19, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3904, 3887, 453, 325, 203}

$$-\frac{4\cot^7(e+fx)(a\sec(e+fx)+a)^{7/2}}{7a^2c^4f}+\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^4f}+\frac{2\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5ac^4f}-\frac{2\cot}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (2*a^(3/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^4*f)
 + (2*a*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^4*f) - (2*Cot[e + f*x]^3*
(a + a*Sec[e + f*x])^(3/2))/(3*c^4*f) + (2*Cot[e + f*x]^5*(a + a*Sec[e + f*
x])^(5/2))/(5*a*c^4*f) - (4*Cot[e + f*x]^7*(a + a*Sec[e + f*x])^(7/2))/(7*a
^2*c^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 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 453

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(c*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*e*(m + 1)),
 x] + Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(a*e^n*(m + 1)), Int[(e*
x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b*c
 - a*d, 0] && (IntegerQ[n] || GtQ[e, 0]) && ((GtQ[n, 0] && LtQ[m, -1]) || (
LtQ[n, 0] && GtQ[m + n, -1])) && !ILtQ[p, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
```

```
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^4}\,dx = \frac{\int \cot^8(e+fx)(a+a\sec(e+fx))^{11/2}\,dx}{a^4c^4}$$
$$= -\frac{2\,\text{Subst}\left(\int \frac{2+ax^2}{x^8(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^2c^4f}$$
$$= -\frac{4\cot^7(e+fx)(a+a\sec(e+fx))^{7/2}}{7a^2c^4f} + \frac{2\,\text{Subst}\left(\int \frac{1}{x^6(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{ac^4f}$$
$$= \frac{2\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5ac^4f} - \frac{4\cot^7(e+fx)(a+a\sec(e+fx))^{7/2}}{7a^2c^4f} - \frac{2\,\text{Sub}\ldots}{}$$
$$= -\frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^4f} + \frac{2\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5ac^4f} - \frac{4\,\text{co}\ldots}{}$$
$$= \frac{2a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^4f} - \frac{2\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^4f} + \frac{2\cot^5(\ldots}{}$$
$$= \frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^4f} + \frac{2a\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^4f} - \frac{2\cot^3(e+fx)(\ldots}{}$$

Mathematica [C] time = 1.29, size = 102, normalized size = 0.59

$$-\frac{2a\sqrt{\cos(e+fx)}\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(7(\cos(e+fx)-1)\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};2\sin^2\left(\frac{1}{2}(e+fx)\right)\right)+\ldots}{35c^4f(\cos(e+fx)-1)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (-2*a*Sqrt[Cos[e + f*x]]*(10*Cos[e + f*x]^(7/2) + 7*(-1 + Cos[e + f*x])*Hyp
ergeometric2F1[-5/2, -5/2, -3/2, 2*Sin[(e + f*x)/2]^2])*Sqrt[a*(1 + Sec[e +
 f*x])]*Tan[(e + f*x)/2])/(35*c^4*f*(-1 + Cos[e + f*x])^4)
```

fricas [A] time = 0.60, size = 495, normalized size = 2.88

$$\left[\frac{105\left(a\cos\left(fx+e\right)^3-3a\cos\left(fx+e\right)^2+3a\cos\left(fx+e\right)-a\right)\sqrt{-a}\,\log\left(-\frac{8a\cos\left(fx+e\right)^3-4\left(2\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-\ldots}}{\cos\left(fx+\ldots\right.}\right.}{210\left(c^4f\cos\left(fx+e\right)^{\ldots}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] [1/210*(105*(a*cos(f*x + e)^3 - 3*a*cos(f*x + e)^2 + 3*a*cos(f*x + e) - a)*
sqrt(-a)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqr
t(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x +
e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*(191*a*cos(f*x + e)^4 - 406*a*
cos(f*x + e)^3 + 350*a*cos(f*x + e)^2 - 105*a*cos(f*x + e))*sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e)))/((c^4*f*cos(f*x + e)^3 - 3*c^4*f*cos(f*x + e)^2 +
 3*c^4*f*cos(f*x + e) - c^4*f)*sin(f*x + e)), 1/105*(105*(a*cos(f*x + e)^3
- 3*a*cos(f*x + e)^2 + 3*a*cos(f*x + e) - a)*sqrt(a)*arctan(2*sqrt(a)*sqrt(
(a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x +
 e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*(191*a*cos(f*x + e)^4 - 406*a
*cos(f*x + e)^3 + 350*a*cos(f*x + e)^2 - 105*a*cos(f*x + e))*sqrt((a*cos(f*
x + e) + a)/cos(f*x + e)))/((c^4*f*cos(f*x + e)^3 - 3*c^4*f*cos(f*x + e)^2
+ 3*c^4*f*cos(f*x + e) - c^4*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^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)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
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able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)4*(-1/389134
5633843118445175236709490016583646199020604658870040699268332542341559159914
772480000*(243672357547795274066925536808541514642607224385482210195405692 2
78918722816680679964672000*sqrt(2)*a^8*sqrt(-a)*sign(cos(f*x+exp(1)))+38913
45633843118445175236709490016583646199020604658870040699268332542341559159 1
4772480000*sqrt(2)*a^2*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a
)*tan(1/2*(f*x+exp(1))))^12*sign(cos(f*x+exp(1)))-165382189438332533919947 5
60153325704804963458375698001976729718904133049516264263778304 0000*sqrt(2)*
a^3*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(
1))))^10*sign(cos(f*x+exp(1)))+39237735141251444322183636820691000551765840
124430310272910384289019801944054854739558 40000*sqrt(2)*a^4*sqrt(-a)*(sqrt(
-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^8*sign(cos(f*
x+exp(1)))-4604759000047690160124030106229852957314668841048846329548160800
86017510417833832480768 0000*sqrt(2)*a^5*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(
1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))+346329761
4120375416205960671446114759445117128338146394336222348815962683987651641 47
5072000*sqrt(2)*a^6*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*t
an(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1)))-1316571939450255073950955086 7
10788944133630668637909584363769919119176825560848844980224000*sqrt(2)*a^7*
sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)))
)^2*sign(cos(f*x+exp(1))))/c^4/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a
)*tan(1/2*(f*x+exp(1))))^2-a)^7-1/4*a^2*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(a
```

```
bs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-
4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*ta
n(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c^4/abs(a))/f
```

maple [B] time = 1.77, size = 401, normalized size = 2.33

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(1+\cos\left(fx+e\right)\right)\left(105\left(\cos^{3}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \sin}{2\cos\left(fx+\right.}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^4,x)
```

```
[Out] 1/105/c^4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(1+cos(f*x+e))*(105*cos(f*x
+e)^3*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-315*sin(
f*x+e)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/
2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+315*c
os(f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1
/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-105*
2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x
+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)-382*cos(f*x+e)
^4+812*cos(f*x+e)^3-700*cos(f*x+e)^2+210*cos(f*x+e))/sin(f*x+e)^3/(-1+cos(f
*x+e))^2*a
```

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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{3/2}}{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^4,x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^4, x)
```

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

$$\frac{\int \frac{a\sqrt{a\sec\left(e+fx\right)+a}}{\sec^{4}\left(e+fx\right)-4\sec^{3}\left(e+fx\right)+6\sec^{2}\left(e+fx\right)-4\sec\left(e+fx\right)+1}\, dx+\int \frac{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)}{\sec^{4}\left(e+fx\right)-4\sec^{3}\left(e+fx\right)+6\sec^{2}\left(e+fx\right)-4\sec\left(e+fx\right)+1}\, dx}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**4,x)
```

```
[Out] (Integral(a*sqrt(a*sec(e + f*x) + a)/(sec(e + f*x)**4 - 4*sec(e + f*x)**3 +
 6*sec(e + f*x)**2 - 4*sec(e + f*x) + 1), x) + Integral(a*sqrt(a*sec(e + f*
x) + a)*sec(e + f*x)/(sec(e + f*x)**4 - 4*sec(e + f*x)**3 + 6*sec(e + f*x)*
*2 - 4*sec(e + f*x) + 1), x))/c**4
```

3.57 $\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^3\,dx$

Optimal. Leaf size=212

$$\frac{2a^{5/2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2a^7c^3\tan^9(e+fx)}{9f(a\sec(e+fx)+a)^{9/2}}-\frac{6a^6c^3\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}-\frac{2a^5c^3\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^4c^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}$$

```
[Out] 2*a^(5/2)*c^3*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f-2*a^3*c^3
*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a^4*c^3*tan(f*x+e)^3/f/(a+a*sec(f*
x+e))^(3/2)-2/5*a^5*c^3*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)-6/7*a^6*c^3*t
an(f*x+e)^7/f/(a+a*sec(f*x+e))^(7/2)-2/9*a^7*c^3*tan(f*x+e)^9/f/(a+a*sec(f*
x+e))^(9/2)
```

Rubi [A] time = 0.19, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {3904, 3887, 461, 203}

$$-\frac{2a^7c^3\tan^9(e+fx)}{9f(a\sec(e+fx)+a)^{9/2}}-\frac{6a^6c^3\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}-\frac{2a^5c^3\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^4c^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2a^{5/2}c^3\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(5/2)*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f -
 (2*a^3*c^3*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^4*c^3*Tan[e +
 f*x]^3)/(3*f*(a + a*Sec[e + f*x])^(3/2)) - (2*a^5*c^3*Tan[e + f*x]^5)/(5*f
*(a + a*Sec[e + f*x])^(5/2)) - (6*a^6*c^3*Tan[e + f*x]^7)/(7*f*(a + a*Sec[e
 + f*x])^(7/2)) - (2*a^7*c^3*Tan[e + f*x]^9)/(9*f*(a + a*Sec[e + f*x])^(9/2
))
```

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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
```

```
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^3\,dx = -\left(\left(a^3c^3\right)\int \frac{\tan^6(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx\right)$$
$$= \frac{\left(2a^6c^3\right)\text{Subst}\left(\int \frac{x^6\left(2+ax^2\right)^2}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= \frac{\left(2a^6c^3\right)\text{Subst}\left(\int \left(\frac{1}{a^3}-\frac{x^2}{a^2}+\frac{x^4}{a}+3x^6+ax^8-\frac{1}{a^3\left(1+ax^2\right)}\right)dx, x\right.}{f}$$
$$= -\frac{2a^3c^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2a^4c^3\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}}-\frac{2a^5c^3}{5f(a+a}$$
$$= \frac{2a^{5/2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}-\frac{2a^3c^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2a}{3f(a}$$

Mathematica [A] time = 1.31, size = 134, normalized size = 0.63

$$-\frac{a^2c^3\tan\left(\frac{1}{2}(e+fx)\right)\sec^4(e+fx)\sqrt{a(\sec(e+fx)+1)}\left((164\cos(e+fx)+1004\cos(2(e+fx))+68\cos(3(e\right.}{1260f\sqrt{\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^3,x]
```

```
[Out] -1/1260*(a^2*c^3*(-2520*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^4 + (9
01 + 164*Cos[e + f*x] + 1004*Cos[2*(e + f*x)] + 68*Cos[3*(e + f*x)] + 383*C
os[4*(e + f*x)])*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]^4*Sqrt[a*(1 + Sec[e
+ f*x])]*Tan[(e + f*x)/2])/(f*Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.53, size = 441, normalized size = 2.08

$$\left[\frac{315\left(a^2c^3\cos\left(fx+e\right)^5+a^2c^3\cos\left(fx+e\right)^4\right)\sqrt{-a}\log\left(\frac{2a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx\right.}{\cos\left(fx+e\right)+1}\right.}{315}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/315*(315*(a^2*c^3*cos(f*x + e)^5 + a^2*c^3*cos(f*x + e)^4)*sqrt(-a)*log(
(2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(383*
a^2*c^3*cos(f*x + e)^4 + 34*a^2*c^3*cos(f*x + e)^3 - 132*a^2*c^3*cos(f*x +
e)^2 - 5*a^2*c^3*cos(f*x + e) + 35*a^2*c^3)*sqrt((a*cos(f*x + e) + a)/cos(f
*x + e))*sin(f*x + e))/(f*cos(f*x + e)^5 + f*cos(f*x + e)^4), -2/315*(315*(
```

```
a^2*c^3*cos(f*x + e)^5 + a^2*c^3*cos(f*x + e)^4)*sqrt(a)*arctan(sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (383*a^
2*c^3*cos(f*x + e)^4 + 34*a^2*c^3*cos(f*x + e)^3 - 132*a^2*c^3*cos(f*x + e)
^2 - 5*a^2*c^3*cos(f*x + e) + 35*a^2*c^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x
 + e))*sin(f*x + e))/(f*cos(f*x + e)^5 + f*cos(f*x + e)^4)]
```

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((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^3,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: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
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able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)-2*(2*((((-73/35*sqrt(2)*
a^7*c^3*sign(cos(f*x+exp(1)))+257/630*sqrt(2)*a^7*c^3*sign(cos(f*x+exp(1)))
*tan(1/2*(f*x+exp(1)))^2)*tan(1/2*(f*x+exp(1)))^2+22/5*sqrt(2)*a^7*c^3*sign
(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2-7/3*sqrt(2)*a^7*c^3*sign(cos(f*x
+exp(1))))*tan(1/2*(f*x+exp(1)))^2+1/2*sqrt(2)*a^7*c^3*sign(cos(f*x+exp(1))
))/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^4*tan(
1/2*(f*x+exp(1)))+1/2*a^3*sqrt(-a)*c^3*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt
(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*
abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x
+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.84, size = 483, normalized size = 2.28

$$c^3\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(-315\left(\cos^4(fx+e)\right)\sin(fx+e)\sqrt{2}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)\left(-\frac{2\cos(fx+e)}{1+\cos(fx+e)}\right)^{\frac{9}{2}}-12$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/5040*c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-315*cos(f*x+e)^4*sin(f*x
+e)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos
(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)-1260*cos(f*x+e)^3*sin
(f*x+e)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)
/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)-1890*cos(f*x+e)^2
*sin(f*x+e)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*
x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)-1260*cos(f*x+
e)*sin(f*x+e)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(
f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)-315*2^(1/2)
*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(
1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)*sin(f*x+e)+12256*cos(f*x+e)^5-11
```

```
168*cos(f*x+e)^4-5312*cos(f*x+e)^3+4064*cos(f*x+e)^2+1280*cos(f*x+e)-1120)/
cos(f*x+e)^4/sin(f*x+e)*a^2
```

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((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^3,x)
[Out] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^3, x)
```

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

$$-c^3\left(\int\left(-a^2\sqrt{a\sec\left(e+fx\right)+a}\right)dx+\int a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)dx+\int 2a^2\sqrt{a\sec\left(e+fx\right)+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)*(c-c*sec(f*x+e))**3,x)
[Out] -c**3*(Integral(-a**2*sqrt(a*sec(e + f*x) + a), x) + Integral(a**2*sqrt(a*s
ec(e + f*x) + a)*sec(e + f*x), x) + Integral(2*a**2*sqrt(a*sec(e + f*x) + a
)*sec(e + f*x)**2, x) + Integral(-2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f
*x)**3, x) + Integral(-a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**4, x) +
Integral(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**5, x))
```

3.58 $\int (a + a\sec(e + fx))^{5/2}(c - c\sec(e + fx))^2\, dx$

Optimal. Leaf size=177

$$\frac{2a^{5/2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2a^6c^2\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}+\frac{6a^5c^2\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^4c^2\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}-\frac{2a\cdots}{f\sqrt{a\cdots}}$$

```
[Out] 2*a^(5/2)*c^2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f-2*a^3*c^2
*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a^4*c^2*tan(f*x+e)^3/f/(a+a*sec(f*
x+e))^(3/2)+6/5*a^5*c^2*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)+2/7*a^6*c^2*t
an(f*x+e)^7/f/(a+a*sec(f*x+e))^(7/2)
```

Rubi [A] time = 0.17, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {3904, 3887, 461, 203}

$$\frac{2a^6c^2\tan^7(e+fx)}{7f(a\sec(e+fx)+a)^{7/2}}+\frac{6a^5c^2\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2a^4c^2\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2a^{5/2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2a\cdots}{f\sqrt{a\cdots}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(5/2)*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f -
 (2*a^3*c^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^4*c^2*Tan[e +
 f*x]^3)/(3*f*(a + a*Sec[e + f*x])^(3/2)) + (6*a^5*c^2*Tan[e + f*x]^5)/(5*f
*(a + a*Sec[e + f*x])^(5/2)) + (2*a^6*c^2*Tan[e + f*x]^7)/(7*f*(a + a*Sec[e
 + f*x])^(7/2))
```

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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^2\,dx = \left(a^2c^2\right)\int \sqrt{a+a\sec(e+fx)}\,\tan^4(e+fx)\,dx$$
$$= -\frac{\left(2a^5c^2\right)\text{Subst}\left(\int \frac{x^4\left(2+ax^2\right)^2}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{\left(2a^5c^2\right)\text{Subst}\left(\int \left(-\frac{1}{a^2}+\frac{x^2}{a}+3x^4+ax^6+\frac{1}{a^2\left(1+ax^2\right)}\right)dx, x, \cdots}{f}$$
$$= -\frac{2a^3c^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2a^4c^2\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}}+\frac{6a^5c^2 \cdots}{5f(a+a \cdots}$$
$$= \frac{2a^{5/2}c^2\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}-\frac{2a^3c^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2a \cdots}{3f(a \cdots}$$

Mathematica [A] time = 0.92, size = 124, normalized size = 0.70

$$-\frac{2a^2c^2\tan\left(\frac{1}{2}(e+fx)\right)\sec^3(e+fx)\sqrt{a(\sec(e+fx)+1)}\,\left((51\cos(e+fx)+23\cos(2(e+fx))+23\cos(3(e+ \cdots}{105f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (-2*a^2*c^2*(-105*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^3 + (8 + 51*
Cos[e + f*x] + 23*Cos[2*(e + f*x)] + 23*Cos[3*(e + f*x)])*Sqrt[-1 + Sec[e +
 f*x]])*Sec[e + f*x]^3*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(105*f*
Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.49, size = 409, normalized size = 2.31

$$\left[\frac{105\left(a^2c^2\cos\left(fx+e\right)^4+a^2c^2\cos\left(fx+e\right)^3\right)\sqrt{-a}\,\log\left(\frac{2a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx \cdots}{\cos\left(fx+e\right)+1}\right) \cdots}{105\left(f\cos\left(fx+ \cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/105*(105*(a^2*c^2*cos(f*x + e)^4 + a^2*c^2*cos(f*x + e)^3)*sqrt(-a)*log(
(2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(92*a
^2*c^2*cos(f*x + e)^3 + 46*a^2*c^2*cos(f*x + e)^2 - 18*a^2*c^2*cos(f*x + e)
 - 15*a^2*c^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos
(f*x + e)^4 + f*cos(f*x + e)^3), -2/105*(105*(a^2*c^2*cos(f*x + e)^4 + a^2*
c^2*cos(f*x + e)^3)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*
cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (92*a^2*c^2*cos(f*x + e)^3 + 46*a^2*
c^2*cos(f*x + e)^2 - 18*a^2*c^2*cos(f*x + e) - 15*a^2*c^2)*sqrt((a*cos(f*x
```

```
+ e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^4 + f*cos(f*x + e)^3)
]
```

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((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)2*(2*(((-29/30*sqrt(2)*a^6*c^2*sign(cos(f*x+exp(1)))+43/210*sqrt(2)*a
^6*c^2*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1)))^2)*tan(1/2*(f*x+exp(1)))
^2+11/6*sqrt(2)*a^6*c^2*sign(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2-1/2*
sqrt(2)*a^6*c^2*sign(cos(f*x+exp(1))))/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(
-a*tan(1/2*(f*x+exp(1)))^2+a)^3*tan(1/2*(f*x+exp(1)))-1/2*a^3*sqrt(-a)*c^2*
sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)
*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x
+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs
(a))/f
```

maple [B] time = 1.57, size = 323, normalized size = 1.82

$$-\frac{c^2\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(105\sin\left(fx+e\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)\left(-\frac{2\cos(fx+e)}{1+\cos(fx+e)}\right)^{\frac{5}{2}}\left(\cos^3\left(fx+e\right)\right)\sqrt{2}+21}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^2,x)
```

```
[Out] -1/420*c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(105*sin(f*x+e)*arctanh(1/
2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(5/2)*cos(f*x+e)^3*2^(1/2)+210*sin(f*x+e)*2^(1/2)
*cos(f*x+e)^2*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/c
os(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)+105*sin(f*x+e)*2^(1
/2)*cos(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/
cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)-736*cos(f*x+e)^4+3
68*cos(f*x+e)^3+512*cos(f*x+e)^2-24*cos(f*x+e)-120)/sin(f*x+e)/cos(f*x+e)^3
*a^2
```

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((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \left(a+\frac{a}{\cos \left(e+f\,x\right)}\right)^{5/2}\,\left(c-\frac{c}{\cos \left(e+f\,x\right)}\right)^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^2, x)
```

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

$$c^2 \left(\int a^2 \sqrt{a \sec \left(e+fx\right)+a}\, dx+\int \left(-2a^2 \sqrt{a \sec \left(e+fx\right)+a} \sec^2 \left(e+fx\right)\right) dx+\int a^2 \sqrt{a \sec \left(e+fx\right)+a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)*(c-c*sec(f*x+e))**2,x)
```

```
[Out] c**2*(Integral(a**2*sqrt(a*sec(e + f*x) + a), x) + Integral(-2*a**2*sqrt(a*
sec(e + f*x) + a)*sec(e + f*x)**2, x) + Integral(a**2*sqrt(a*sec(e + f*x) +
 a)*sec(e + f*x)**4, x))
```

3.59 $\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))\,dx$

Optimal. Leaf size=132

$$\frac{2a^{5/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2a^5c\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}-\frac{2a^4c\tan^3(e+fx)}{f(a\sec(e+fx)+a)^{3/2}}-\frac{2a^3c\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*a^(5/2)*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f-2*a^3*c*tan
(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2*a^4*c*tan(f*x+e)^3/f/(a+a*sec(f*x+e))^(3
/2)-2/5*a^5*c*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.14, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {3904, 3887, 461, 203}

$$-\frac{2a^5c\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}-\frac{2a^4c\tan^3(e+fx)}{f(a\sec(e+fx)+a)^{3/2}}+\frac{2a^{5/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}-\frac{2a^3c\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*a^(5/2)*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f - (
2*a^3*c*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) - (2*a^4*c*Tan[e + f*x]^
3)/(f*(a + a*Sec[e + f*x])^(3/2)) - (2*a^5*c*Tan[e + f*x]^5)/(5*f*(a + a*Se
c[e + f*x])^(5/2))
```

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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))\,dx = -\left((ac)\int (a+a\sec(e+fx))^{3/2}\tan^2(e+fx)\,dx\right)$$
$$= \frac{(2a^4c)\,\text{Subst}\left(\int \frac{x^2(2+ax^2)^2}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= \frac{(2a^4c)\,\text{Subst}\left(\int \left(\frac{1}{a}+3x^2+ax^4-\frac{1}{a(1+ax^2)}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+f}}\right.}{f}$$
$$= -\frac{2a^3c\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2a^4c\tan^3(e+fx)}{f(a+a\sec(e+fx))^{3/2}} - \frac{2a^5c\tan}{5f(a+a\sec}$$
$$= \frac{2a^{5/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} - \frac{2a^3c\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2a^4c}{f(a+a}$$

Mathematica [A] time = 0.81, size = 110, normalized size = 0.83

$$-\frac{a^2c\tan\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\left((6\cos(e+fx)+\cos(2(e+fx))+3)\sqrt{\sec(e+fx)-1}\right.}{5f\sqrt{\sec(e+fx)-1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x]),x]
```

```
[Out] -1/5*(a^2*c*(-10*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^2 + (3 + 6*Co
s[e + f*x] + Cos[2*(e + f*x)])*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]^2*Sqrt
[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(f*Sqrt[-1 + Sec[e + f*x]])
```

fricas [A] time = 0.50, size = 353, normalized size = 2.67

$$\left[\frac{5\left(a^2c\cos(fx+e)^3+a^2c\cos(fx+e)^2\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos(fx+e)^2-2\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)+a\cos(fx+e)-a}{\cos(fx+e)+1}\right.}{5\left(f\cos(fx+e)^3+f\cos(fx+e\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/5*(5*(a^2*c*cos(f*x + e)^3 + a^2*c*cos(f*x + e)^2)*sqrt(-a)*log((2*a*cos
(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(a^2*c*cos(f*
x + e)^2 + 3*a^2*c*cos(f*x + e) + a^2*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x
+ e))*sin(f*x + e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^2), -2/5*(5*(a^2*c*c
os(f*x + e)^3 + a^2*c*cos(f*x + e)^2)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) +
 a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (a^2*c*cos(f*x + e
)^2 + 3*a^2*c*cos(f*x + e) + a^2*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
*sin(f*x + e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^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((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e)),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: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
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able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)-2*(2*(
1/2*sqrt(2)*a^5*c*sign(cos(f*x+exp(1)))-1/10*sqrt(2)*a^5*c*sign(cos(f*x+exp
(1)))*tan(1/2*(f*x+exp(1)))^4)/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1
/2*(f*x+exp(1)))^2+a)^2*tan(1/2*(f*x+exp(1)))+1/2*a^3*sqrt(-a)*c*sign(cos(f
*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(
f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^
2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.37, size = 303, normalized size = 2.30

$$-\frac{c\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(5\sin\left(fx+e\right)\sqrt{2}\,\left(\cos^2\left(fx+e\right)\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{5}{2}}+10\sin\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e)),x)
```

```
[Out] -1/20*c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(5*sin(f*x+e)*2^(1/2)*cos(f*x
+e)^2*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e
)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)+10*sin(f*x+e)*2^(1/2)*cos(f
*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e
)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)+5*2^(1/2)*arctanh(1/2*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+
e)/(1+cos(f*x+e)))^(5/2)*sin(f*x+e)-8*cos(f*x+e)^3-16*cos(f*x+e)^2+16*cos(f
*x+e)+8)/cos(f*x+e)^2/sin(f*x+e)*a^2
```

maxima [B] time = 1.15, size = 1396, normalized size = 10.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/6*(30*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^
(3/4)*a^(5/2)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - 2*
(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*((
12*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))*sin(2*f*x + 2*e
) - 3*a^2*sin(2*f*x + 2*e) - 4*(3*a^2*cos(2*f*x + 2*e) + 4*a^2)*sin(3/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e) + 1)) + (12*a^2*sin(2*f*x + 2*e)*sin(3/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))) + 3*a^2*cos(2*f*x + 2*e) - a^2 + 4*(3*a^2*cos
(2*f*x + 2*e) + 4*a^2)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)))*sqrt(a) + 3*((a
```

```
^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e)^2 + 2*a^2*cos(2*f*x + 2*e) + a
^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) +
 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1
)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e)))) + 1) - (a^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e)^2 + 2*a^2*cos(
2*f*x + 2*e) + a^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*co
s(2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(
2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
 + 1))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))) - 1) - (a^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e
)^2 + 2*a^2*cos(2*f*x + 2*e) + a^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x
 + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e) + 1)), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2
*f*x + 2*e) + 1)^(1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) +
 1)) + 1) + (a^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e)^2 + 2*a^2*cos(2*
f*x + 2*e) + a^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(
2*f*x + 2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
+ 1)), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(
1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - 1))*sqrt(a)
)*c/((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x)),x)
[Out] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x)), x)
```

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

$$-c\left(\int\left(-a^2\sqrt{a\sec\left(e+fx\right)+a}\right)dx+\int\left(-a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)\right)dx+\int a^2\sqrt{a\sec\left(e+fx\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)*(c-c*sec(f*x+e)),x)
[Out] -c*(Integral(-a**2*sqrt(a*sec(e + f*x) + a), x) + Integral(-a**2*sqrt(a*sec
(e + f*x) + a)*sec(e + f*x), x) + Integral(a**2*sqrt(a*sec(e + f*x) + a)*se
c(e + f*x)**2, x) + Integral(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**3,
 x))
```

3.60 $\int \frac{(a+a\sec(e+fx))^{5/2}}{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=103

$$\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}-\frac{2a^3\tan(e+fx)}{cf\sqrt{a\sec(e+fx)+a}}+\frac{8a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{cf}$$

```
[Out] 2*a^(5/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c/f+8*a^2*cot(f
*x+e)*(a+a*sec(f*x+e))^(1/2)/c/f-2*a^3*tan(f*x+e)/c/f/(a+a*sec(f*x+e))^(1/2
)
```

Rubi [A] time = 0.17, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {3904, 3887, 461, 203}

$$\frac{8a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{cf}+\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}-\frac{2a^3\tan(e+fx)}{cf\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*a^(5/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c*f) +
 (8*a^2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c*f) - (2*a^3*Tan[e + f*x])
/(c*f*Sqrt[a + a*Sec[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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{c-c\sec(e+fx)}\,dx = -\frac{\int \cot^2(e+fx)(a+a\sec(e+fx))^{7/2}\,dx}{ac}$$
$$= \frac{(2a^2)\,\mathrm{Subst}\left(\int \frac{(2+ax^2)^2}{x^2(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf}$$
$$= \frac{(2a^2)\,\mathrm{Subst}\left(\int \left(a+\frac{4}{x^2}-\frac{a}{1+ax^2}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf}$$
$$= \frac{8a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{cf} - \frac{2a^3\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}} - \frac{(2a^3)\,\mathrm{Subst}\left(\int \right.}{}$$
$$= \frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} + \frac{8a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{cf} - \frac{2a^3\tan(}{cf\sqrt{a+a\,\mathrm{se}}}$$

Mathematica [A] time = 0.72, size = 96, normalized size = 0.93

$$\frac{2a^3\tan(e+fx)\sec(e+fx)\left((5\cos(e+fx)-1)\sqrt{\sec(e+fx)-1}-(\cos(e+fx)-1)\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right.\right.}{cf(\sec(e+fx)-1)^{3/2}\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x]),x]
```

```
[Out] (2*a^3*(-(ArcTan[Sqrt[-1 + Sec[e + f*x]]]*(-1 + Cos[e + f*x])) + (-1 + 5*Co
s[e + f*x])*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]*Tan[e + f*x])/(c*f*(-1 +
Sec[e + f*x])^(3/2)*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 0.58, size = 291, normalized size = 2.83

$$\left[\frac{\sqrt{-a}\,a^2\log\left(-\frac{8a\cos(fx+e)^3-4\left(2\cos(fx+e)^2-\cos(fx+e)\right)\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sin(fx+e)-7a\cos(fx+e)+a}{\cos(fx+e)+1}\right)\sin(fx+e)+4\left(5a^2\right.}{2cf\sin(fx+e)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(-a)*a^2*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x
 + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*
cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*(5*a^2*cos(f*x + e)
- a^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/(c*f*sin(f*x + e)), (a^(5/2
)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*(5*a^
2*cos(f*x + e) - a^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/(c*f*sin(f*x
 + e))]
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)-2*(sqr
t(2)*a^3*sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)*sign(cos(f*x+exp(1)))*tan(1/2*(
f*x+exp(1)))/c/(-a*tan(1/2*(f*x+exp(1)))^2+a)+2*(1/4*a^3*sqrt(-a)*sign(cos(
f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))
^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c/abs(a)+2*s
qrt(2)*a^3*sqrt(-a)*sign(cos(f*x+exp(1)))/c/((sqrt(-a*tan(1/2*(f*x+exp(1)))
^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-a)))/f
```

maple [A] time = 1.36, size = 120, normalized size = 1.17

$$\frac{\left(-\sqrt{2}\,\sin\left(fx+e\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}+10\cos\left(fx+e\right)-2\right)\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,a^{2}}{cf\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] 1/c/f*(-2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+10*cos
(f*x+e)-2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)*a^2
```

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

$$-\int \frac{\left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{c\sec\left(fx+e\right)-c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -integrate((a*sec(f*x + e) + a)^(5/2)/(c*sec(f*x + e) - c), x)
```

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

$$\int \frac{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}}{c-\frac{c}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x)), x)
```

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

$$-\frac{\int \frac{a^2\sqrt{a\sec\left(e+fx\right)+a}}{\sec\left(e+fx\right)-1}\,dx+\int \frac{2a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)}{\sec\left(e+fx\right)-1}\,dx+\int \frac{a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec^2\left(e+fx\right)}{\sec\left(e+fx\right)-1}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -(Integral(a**2*sqrt(a*sec(e + f*x) + a)/(sec(e + f*x) - 1), x) + Integral(
2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)/(sec(e + f*x) - 1), x) + Integ
ral(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**2/(sec(e + f*x) - 1), x))/c
```

3.61 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=74

$$\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^2f}-\frac{8a\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3c^2f}$$

```
[Out] 2*a^(5/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c^2/f-8/3*a*cot
(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/c^2/f
```

Rubi [A] time = 0.17, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 461, 203}

$$\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^2f}-\frac{8a\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3c^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(5/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^2*f)
 - (8*a*Cot[e + f*x]^3*(a + a*Sec[e + f*x])^(3/2))/(3*c^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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^2}\,dx = \frac{\int \cot^4(e+fx)(a+a\sec(e+fx))^{9/2}\,dx}{a^2c^2}$$
$$= -\frac{(2a)\,\text{Subst}\left(\int \frac{(2+ax^2)^2}{x^4(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f}$$
$$= -\frac{(2a)\,\text{Subst}\left(\int \left(\frac{4}{x^4}+\frac{a^2}{1+ax^2}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f}$$
$$= -\frac{8a\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^2f} - \frac{(2a^3)\,\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f}$$
$$= \frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^2f} - \frac{8a\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^2f}$$

Mathematica [**A**] time = 4.22, size = 102, normalized size = 1.38

$$-\frac{\cos^{\frac{5}{2}}(e+fx)\csc^3\left(\frac{1}{2}(e+fx)\right)\sec^5\left(\frac{1}{2}(e+fx)\right)(a(\sec(e+fx)+1))^{5/2}\left(4\cos^{\frac{3}{2}}(e+fx)-3(1-\cos(e+fx))^{3/2}\cdots\right.}{24c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^2,x]
```

```
[Out] -1/24*(Cos[e + f*x]^(5/2)*(-3*ArcSin[Sqrt[1 - Cos[e + f*x]]]*(1 - Cos[e + f
*x])^(3/2) + 4*Cos[e + f*x]^(3/2))*Csc[(e + f*x)/2]^3*Sec[(e + f*x)/2]^5*(a
*(1 + Sec[e + f*x]))^(5/2))/(c^2*f)
```

fricas [**B**] time = 0.57, size = 339, normalized size = 4.58

$$\left[\frac{16\,a^2\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)^2+3\left(a^2\cos(fx+e)-a^2\right)\sqrt{-a}\log\left(-\frac{8\,a\cos(fx+e)^3-4\left(2\cos(fx+e)^2-\cos(fx+e)\right)\sqrt{-\cdots}}{\cos(fx+\cdots}\right.}{6\left(c^2f\cos(fx+e)-c^2f\right)\sin(fx+e)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/6*(16*a^2*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)^2 + 3*(a^
2*cos(f*x + e) - a^2)*sqrt(-a)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x + e)
^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x
 + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e))/((c^2*f*cos
(f*x + e) - c^2*f)*sin(f*x + e)), 1/3*(8*a^2*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*cos(f*x + e)^2 + 3*(a^2*cos(f*x + e) - a^2)*sqrt(a)*arctan(2*sqrt
(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*
cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e))/((c^2*f*cos(f*x + e) -
c^2*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)-128*sqrt(2)*a^3*sqr
t(-a)*(-a)^2*(1/96*(3*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^4+a^2)/a^2/c^2/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)
*tan(1/2*(f*x+exp(1))))^2-a)^3+1/128*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1))
)^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(
-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*a
bs(a)-6*a))/sqrt(2)/a^2/c^2/abs(a))*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 1.42, size = 351, normalized size = 4.74

$$-\frac{\left(3\sqrt{2}\,\left(\cos^{3}\left(fx+e\right)\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)-3\left(\cos^{2}\left(fx+e\right)\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\mathrm{arc}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^2,x)
```

```
[Out] -1/3/c^2/f*(3*2^(1/2)*cos(f*x+e)^3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arc
tanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2)
)-3*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*2^(1/2)-3*2^(1/2
)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e
)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+8*cos(f*x+e)^2*sin(f
*x+e)+3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+
cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*2^(1/2))*(a*(1+cos(f*x+e)
)/cos(f*x+e))^(1/2)/(-1+cos(f*x+e))^2/(1+cos(f*x+e))*a^2
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^2,x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^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+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**2,x)
[Out] Timed out
```

3.62 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=104

$$\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^3f}+\frac{2a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^3f}+\frac{8\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5c^3f}$$

```
[Out] 2*a^(5/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c^3/f+8/5*cot(f
*x+e)^5*(a+a*sec(f*x+e))^(5/2)/c^3/f+2*a^2*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2
)/c^3/f
```

Rubi [A] time = 0.18, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {3904, 3887, 461, 203}

$$\frac{2a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^3f}+\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^3f}+\frac{8\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5c^3f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(5/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^3*f)
 + (2*a^2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^3*f) + (8*Cot[e + f*x]^
5*(a + a*Sec[e + f*x])^(5/2))/(5*c^3*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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^3}\,dx = -\frac{\int \cot^6(e+fx)(a+a\sec(e+fx))^{11/2}\,dx}{a^3c^3}$$
$$= \frac{2\,\mathrm{Subst}\left(\int \frac{(2+ax^2)^2}{x^6(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^3f}$$
$$= \frac{2\,\mathrm{Subst}\left(\int \left(\frac{4}{x^6}+\frac{a^2}{x^2}-\frac{a^3}{1+ax^2}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^3f}$$
$$= \frac{2a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^3f} + \frac{8\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5c^3f} - \frac{(2a$$
$$= \frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^3f} + \frac{2a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^3f} + \frac{8\cot^5(e+f$$

Mathematica [C] time = 5.33, size = 196, normalized size = 1.88

$$\frac{a^2\sqrt{\cos(e+fx)}\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(4(20\cos(e+fx)-15\cos(2(e+fx))-29)\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^3,x]
```

```
[Out] (a^2*Sqrt[Cos[e + f*x]]*Sqrt[a*(1 + Sec[e + f*x])]*(30*ArcSin[Sqrt[1 - Cos[
e + f*x]]]*Cos[(e + f*x)/2]^2*Sqrt[1 - Cos[e + f*x]]*(-1 + 7*Cos[e + f*x])
+ 4*(-29 + 20*Cos[e + f*x] - 15*Cos[2*(e + f*x)])*Hypergeometric2F1[-5/2, -
1/2, 1/2, 2*Sin[(e + f*x)/2]^2] + 5*Sqrt[Cos[e + f*x]]*(11*Cos[e + f*x] + 3
*Cos[2*(e + f*x)])*Sin[e + f*x]^2)*Tan[(e + f*x)/2])/(60*c^3*f*(-1 + Cos[e
+ f*x])^3)
```

fricas [B] time = 0.57, size = 441, normalized size = 4.24

$$\left[\frac{5\left(a^2\cos\left(fx+e\right)^2-2\,a^2\cos\left(fx+e\right)+a^2\right)\sqrt{-a}\log\left(-\frac{8\,a\cos\left(fx+e\right)^3-4\left(2\cos\left(fx+e\right)^2-\cos\left(fx+e\right)\right)\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sin}{\cos\left(fx+e\right)+1}\right.}{10\left(c^3f\cos\left(fx+e\right)^2-2\,c^3f\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/10*(5*(a^2*cos(f*x + e)^2 - 2*a^2*cos(f*x + e) + a^2)*sqrt(-a)*log(-(8*a
*cos(f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x +
 e) + 1))*sin(f*x + e) + 4*(9*a^2*cos(f*x + e)^3 - 10*a^2*cos(f*x + e)^2 +
5*a^2*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((c^3*f*cos(f*
x + e)^2 - 2*c^3*f*cos(f*x + e) + c^3*f)*sin(f*x + e)), 1/5*(5*(a^2*cos(f*x
 + e)^2 - 2*a^2*cos(f*x + e) + a^2)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*
x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a
*cos(f*x + e) - a))*sin(f*x + e) + 2*(9*a^2*cos(f*x + e)^3 - 10*a^2*cos(f*x
```

```
 + e)^2 + 5*a^2*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((c^
3*f*cos(f*x + e)^2 - 2*c^3*f*cos(f*x + e) + c^3*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^3,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: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)-4*(1/64424509440*(773094
11328*a^7*sqrt(-a)*sign(cos(f*x+exp(1)))+128849018880*a^3*sqrt(-a)*(sqrt(-a
*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^8*sign(cos(f*x+
exp(1)))-257698037760*a^4*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt
(-a)*tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))+515396075520*a^5*sqrt(-
a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*si
gn(cos(f*x+exp(1)))-257698037760*a^6*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1))
)^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1))))/sqrt(2)/c^3
/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-a)^
5+1/4*a^3*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp
(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(s
qrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(
2)*abs(a)-6*a))/c^3/abs(a))/f
```

maple [B] time = 1.62, size = 306, normalized size = 2.94

$$\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-5\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+10\cos\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/5/c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-5*sin(f*x+e)*cos(f*x+e)^2*2
^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+10*cos(f*x+e)*sin(f*x+e)*2
^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-5*2^(1/2)*sin(f*x+e)*arcta
nh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+18*cos(f*x+e)^3-20*cos(f*x+e)^2+10*cos
(f*x+e))/sin(f*x+e)/(-1+cos(f*x+e))^2*a^2
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^3,x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*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((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**3,x)
[Out] Timed out
```

3.63 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^4}\,dx$

Optimal. Leaf size=140

$$\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^4f}+\frac{2a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^4f}-\frac{8\cot^7(e+fx)(a\sec(e+fx)+a)^{7/2}}{7ac^4f}-\frac{2a\cot^3(e+\cdots}{\cdots}$$

```
[Out] 2*a^(5/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c^4/f-2/3*a*cot
(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/c^4/f-8/7*cot(f*x+e)^7*(a+a*sec(f*x+e))^(7
/2)/a/c^4/f+2*a^2*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/c^4/f
```

Rubi [A] time = 0.18, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 461, 203}

$$\frac{2a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^4f}+\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^4f}-\frac{8\cot^7(e+fx)(a\sec(e+fx)+a)^{7/2}}{7ac^4f}-\frac{2a\cot^3(e+\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] (2*a^(5/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^4*f)
 + (2*a^2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^4*f) - (2*a*Cot[e + f*x
]^3*(a + a*Sec[e + f*x])^(3/2))/(3*c^4*f) - (8*Cot[e + f*x]^7*(a + a*Sec[e
+ f*x])^(7/2))/(7*a*c^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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^4}\,dx = \frac{\int \cot^8(e+fx)(a+a\sec(e+fx))^{13/2}\,dx}{a^4c^4}$$
$$= -\frac{2\,\text{Subst}\left(\int \frac{(2+ax^2)^2}{x^8(1+ax^2)}dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{ac^4f}$$
$$= -\frac{2\,\text{Subst}\left(\int \left(\frac{4}{x^8}+\frac{a^2}{x^4}-\frac{a^3}{x^2}+\frac{a^4}{1+ax^2}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{ac^4f}$$
$$= \frac{2a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^4f} - \frac{2a\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^4f} - 8$$
$$= \frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^4f} + \frac{2a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^4f} - 2a\cot^3(e+$$

Mathematica [C] time = 7.98, size = 361, normalized size = 2.58

$$-\frac{\sin^8\left(\frac{e}{2}+\frac{fx}{2}\right)\sqrt{\frac{1}{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}}\sqrt{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}\csc^7\left(\frac{1}{2}(e+fx)\right)\sec^5\left(\frac{1}{2}(e+fx)\right)\sec^{\frac{3}{2}}(e+fx)(a(se}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^4,x]
```

```
[Out] -1/210*(Csc[(e + f*x)/2]^7*Sec[(e + f*x)/2]^5*Sec[e + f*x]^(3/2)*(a*(1 + Se
c[e + f*x]))^(5/2)*Sin[e/2 + (f*x)/2]^8*Sqrt[(1 - 2*Sin[(e + f*x)/2]^2)^(-1
)]*Sqrt[1 - 2*Sin[(e + f*x)/2]^2]*(336*Hypergeometric2F1[-5/2, -1/2, 1/2, 2
*Sin[(e + f*x)/2]^2]*Sin[(e + f*x)/2]^2*(3 - 8*Sin[(e + f*x)/2]^2 + 5*Sin[(
e + f*x)/2]^4) + 4*Hypergeometric2F1[-7/2, -3/2, -1/2, 2*Sin[(e + f*x)/2]^2
]*(15 - 42*Sin[(e + f*x)/2]^2 + 35*Sin[(e + f*x)/2]^4) - 105*Cos[(e + f*x)/
2]^4*(3*Sqrt[2]*ArcSin[Sqrt[2]*Sqrt[Sin[(e + f*x)/2]^2]]*(Sin[(e + f*x)/2]^
2)^(3/2) + 2*Sin[(e + f*x)/2]^4*(5 - 4*Sin[(e + f*x)/2]^2)*Sqrt[1 - 2*Sin[(
e + f*x)/2]^2])))/(f*(c - c*Sec[e + f*x])^4)
```

fricas [B] time = 0.57, size = 527, normalized size = 3.76

$$\left[\frac{21\left(a^2\cos(fx+e)^3-3a^2\cos(fx+e)^2+3a^2\cos(fx+e)-a^2\right)\sqrt{-a}\log\left(-\frac{8a\cos(fx+e)^3-4\left(2\cos(fx+e)^2-\cos(fx\right.}{c}\right.}{42\left(c^4f\cos(fx+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] [1/42*(21*(a^2*cos(f*x + e)^3 - 3*a^2*cos(f*x + e)^2 + 3*a^2*cos(f*x + e) -
 a^2)*sqrt(-a)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f*x + e)^2 - cos(f*x + e
))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(
f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*(40*a^2*cos(f*x + e)^4 -
 77*a^2*cos(f*x + e)^3 + 70*a^2*cos(f*x + e)^2 - 21*a^2*cos(f*x + e))*sqrt(
```

```
(a*cos(f*x + e) + a)/cos(f*x + e)))/((c^4*f*cos(f*x + e)^3 - 3*c^4*f*cos(f*
x + e)^2 + 3*c^4*f*cos(f*x + e) - c^4*f)*sin(f*x + e)), 1/21*(21*(a^2*cos(f
*x + e)^3 - 3*a^2*cos(f*x + e)^2 + 3*a^2*cos(f*x + e) - a^2)*sqrt(a)*arctan
(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e
)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*(40*a^2*cos(f
*x + e)^4 - 77*a^2*cos(f*x + e)^3 + 70*a^2*cos(f*x + e)^2 - 21*a^2*cos(f*x
+ e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((c^4*f*cos(f*x + e)^3 - 3*c
^4*f*cos(f*x + e)^2 + 3*c^4*f*cos(f*x + e) - c^4*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^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)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)4*(-1/906024
508607368554262266659524761276237247283711251539653329939658879847628800000*
(5608723148521805335909269797058045995754387946783938102615852007412113342
4640000*sqrt(2)*a^9*sqrt(-a)*sign(cos(f*x+exp(1)))+906024508607368554262266
6595247612762372472837112515396533299396588798476288000000*sqrt(2)*a^3*sqrt(-a
)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^12*si
gn(cos(f*x+exp(1)))-36240980344294742170490666380990451049489891348450061586
133197586355193905152000 0*sqrt(2)*a^4*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1
)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^10*sign(cos(f*x+exp(1)))+936225325
5609475060710088815089199854451555265016265909751076043141758425497600000*sq
rt(2)*a^5*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*
x+exp(1))))^8*sign(cos(f*x+exp(1)))-1026827776421684361497235547461396113068
880254872751744940440598280063827312640000*sqrt(2)*a^6*sqrt(-a)*(sqrt(-a*t
an(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+ex
p(1)))+815422057746631698836039993572285148613522555340126385687996945692991
862865920000*sqrt(2)*a^7*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt
(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1)))-302008169535789518087422
2198415870920790824279037505132177766465529599492096000000*sqrt(2)*a^8*sqrt
(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*
sign(cos(f*x+exp(1)))))/c^4/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*ta
n(1/2*(f*x+exp(1))))^2-a)^7-1/4*a^3*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(abs(2
*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sq
rt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/
2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c^4/abs(a))/f
```

maple [B] time = 1.63, size = 395, normalized size = 2.82

$$\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(-21\left(\cos^{3}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+63$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^4,x)
```

```
[Out] 1/21/c^4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-21*cos(f*x+e)^3*sin(f*x+e)
*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+63*sin(f*x+e)*cos(f*x+e)
^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-63*cos(f*x+e)*sin(f*x+
e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+80*cos(f*x+e)^4+21*2^(
1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)
/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)-154*cos(f*x+e)^3+
140*cos(f*x+e)^2-42*cos(f*x+e))/sin(f*x+e)/(-1+cos(f*x+e))^3*a^2
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^4,x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^4, 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+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**4,x)
```

```
[Out] Timed out
```

3.64 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^5}\,dx$

Optimal. Leaf size=172

$$\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^5f}+\frac{8\cot^9(e+fx)(a\sec(e+fx)+a)^{9/2}}{9a^2c^5f}+\frac{2a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^5f}+\frac{2\cot^5(e+$$

```
[Out] 2*a^(5/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c^5/f-2/3*a*cot
(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/c^5/f+2/5*cot(f*x+e)^5*(a+a*sec(f*x+e))^(5
/2)/c^5/f+8/9*cot(f*x+e)^9*(a+a*sec(f*x+e))^(9/2)/a^2/c^5/f+2*a^2*cot(f*x+e
)*(a+a*sec(f*x+e))^(1/2)/c^5/f
```

Rubi [A] time = 0.20, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3904, 3887, 461, 203}

$$\frac{8\cot^9(e+fx)(a\sec(e+fx)+a)^{9/2}}{9a^2c^5f}+\frac{2a^2\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{c^5f}+\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{c^5f}+\frac{2\cot^5(e+$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (2*a^(5/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c^5*f)
 + (2*a^2*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(c^5*f) - (2*a*Cot[e + f*x
]^3*(a + a*Sec[e + f*x])^(3/2))/(3*c^5*f) + (2*Cot[e + f*x]^5*(a + a*Sec[e
+ f*x])^(5/2))/(5*c^5*f) + (8*Cot[e + f*x]^9*(a + a*Sec[e + f*x])^(9/2))/(9
*a^2*c^5*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 461

```
Int[(((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_))/((c_) + (d_.)*(x_)^(
n_)), x_Symbol] :> Int[ExpandIntegrand[((e*x)^m*(a + b*x^n)^p)/(c + d*x^n),
 x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0]
&& IGtQ[p, 0] && (IntegerQ[m] || IGtQ[2*(m + 1), 0] ||  !RationalQ[m])
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^5}\,dx = -\frac{\int \cot^{10}(e+fx)(a+a\sec(e+fx))^{15/2}\,dx}{a^5c^5}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \frac{(2+ax^2)^2}{x^{10}(1+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^2c^5f}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \left(\frac{4}{x^{10}}+\frac{a^2}{x^6}-\frac{a^3}{x^4}+\frac{a^4}{x^2}-\frac{a^5}{1+ax^2}\right)dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^2c^5f}$$

$$= \frac{2a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^5f} - \frac{2a\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3c^5f} + 2\ldots$$

$$= \frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{c^5f} + \frac{2a^2\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{c^5f} - 2a\cot^3(e+\ldots$$

Mathematica [C] time = 3.56, size = 205, normalized size = 1.19

$$\frac{a^2\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(-15(\cos(e+fx)-2\cos(2(e+fx))-\cos(3(e+fx))+2)\,{}_3F_2\left(-\frac{7}{2},-\frac{3}{2}\ldots\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^5,x]
```

```
[Out] (a^2*Sqrt[a*(1 + Sec[e + f*x])]*((109 + 108*Cos[e + f*x] + 63*Cos[2*(e + f*
x)])*Hypergeometric2F1[-9/2, -5/2, -3/2, 2*Sin[(e + f*x)/2]^2] - 15*(2 + Co
s[e + f*x] - 2*Cos[2*(e + f*x)] - Cos[3*(e + f*x)])*HypergeometricPFQ[{-7/2
, -3/2, 2}, {-1/2, 1}, 2*Sin[(e + f*x)/2]^2] + 240*(1 + 2*Cos[e + f*x])*Hyp
ergeometric2F1[-7/2, -3/2, -1/2, 2*Sin[(e + f*x)/2]^2]*Sin[e + f*x]^2)*Tan[
(e + f*x)/2])/(315*c^5*f*Cos[e + f*x]^(9/2)*(-1 + Sec[e + f*x])^5)
```

fricas [A] time = 0.58, size = 601, normalized size = 3.49

$$\left[\frac{45\left(a^2\cos\left(fx+e\right)^4-4\,a^2\cos\left(fx+e\right)^3+6\,a^2\cos\left(fx+e\right)^2-4\,a^2\cos\left(fx+e\right)+a^2\right)\sqrt{-a}\,\log\left(-\frac{8\,a\cos\left(fx+e\right)\ldots}{}\right.}{90\,(c\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] [1/90*(45*(a^2*cos(f*x + e)^4 - 4*a^2*cos(f*x + e)^3 + 6*a^2*cos(f*x + e)^2
 - 4*a^2*cos(f*x + e) + a^2)*sqrt(-a)*log(-(8*a*cos(f*x + e)^3 - 4*(2*cos(f
*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*
sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) + 4*(
89*a^2*cos(f*x + e)^5 - 243*a^2*cos(f*x + e)^4 + 324*a^2*cos(f*x + e)^3 - 1
95*a^2*cos(f*x + e)^2 + 45*a^2*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e)))/((c^5*f*cos(f*x + e)^4 - 4*c^5*f*cos(f*x + e)^3 + 6*c^5*f*cos(f*
```

```
x + e)^2 - 4*c^5*f*cos(f*x + e) + c^5*f)*sin(f*x + e)), 1/45*(45*(a^2*cos(f
*x + e)^4 - 4*a^2*cos(f*x + e)^3 + 6*a^2*cos(f*x + e)^2 - 4*a^2*cos(f*x + e
) + a^2)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*c
os(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x
 + e) + 2*(89*a^2*cos(f*x + e)^5 - 243*a^2*cos(f*x + e)^4 + 324*a^2*cos(f*x
 + e)^3 - 195*a^2*cos(f*x + e)^2 + 45*a^2*cos(f*x + e))*sqrt((a*cos(f*x + e
) + a)/cos(f*x + e)))/((c^5*f*cos(f*x + e)^4 - 4*c^5*f*cos(f*x + e)^3 + 6*c
^5*f*cos(f*x + e)^2 - 4*c^5*f*cos(f*x + e) + c^5*f)*sin(f*x + e))]
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^5,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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)-4*(1/212104235903702651592273580605531499081304021970179977316467455128411
074328103129796883447556243947267016263085881106188206080000*(131975969006
748316546303561265664043872811391448111985885801972079900224026375280762505
2562572184560772545636978815771837726720000*sqrt(2)*a^11*sqrt(-a)*sign(cos(f
*x+exp(1)))+212104235903702651592273580605531499081304021970179977316467455
128411074328103129796883447556243947267016263085881106188206080000*sqrt(2)*
a^3*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(
1))))^16*sign(cos(f*x+exp(1)))-127262541542221590955364148363318899448782411
318210798638988047307704664459686187787813006853374636836020975785152866371
29236480000*sqrt(2)*a^4*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-
a)*tan(1/2*(f*x+exp(1))))^14*sign(cos(f*x+exp(1)))+424208471807405303184547
161211062998162608043940359954632934910256822148656206259593766895112487894
534032526171762212376412160000*sqrt(2)*a^5*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+
exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^12*sign(cos(f*x+exp(1)))-7423
648256629592805729575321193602467845640768956299206076360929494387601483609
5428909206644685381543455692080058387165872128000000*sqrt(2)*a^6*sqrt(-a)*(s
qrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^10*sign(c
os(f*x+exp(1)))+920532383822069507910467339828006706012859455350581101553468
75552573040625839675833184741623940987311388505817927240008568143872000*sqr
t(2)*a^7*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x
+exp(1))))^8*sign(cos(f*x+exp(1)))-684389667849280555804402753420514970369
0076442237807268078016552143397331653460988112772574481471365149058088904430
359672782848000*sqrt(2)*a^8*sqrt(-a)*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sq
rt(-a)*tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))+347850946882072348611
328672193071658493338596031095162799006626410594161898089132866888853992240
0735179066714608450141486579712000*sqrt(2)*a^9*sqrt(-a)*(sqrt(-a*tan(1/2*(f
*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1)))-97
567948515703219732445847078544489577399850106282789565575029359069094190927
4397065663858758722157428274810195053088465747968000*sqrt(2)*a^10*sqrt(-a)*
```

```
(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(
cos(f*x+exp(1))))/c^5/((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2
*(f*x+exp(1))))^2-a)^9+1/4*a^3*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(abs(2*(sqr
t(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)
*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*
x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c^5/abs(a))/f
```

maple [B] time = 1.90, size = 492, normalized size = 2.86

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(1+\cos\left(fx+e\right)\right)\left(-45\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\left(\cos^{4}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+\cdots\right.}{1+\cos\left(fx\cdots\right.}}}{2c\cdots}\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^5,x)
```

```
[Out] -1/45/c^5/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(1+cos(f*x+e))*(-45*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*cos(f*x+e)^4*sin(f*x+e)*2^(1/2)*arctanh(1/2*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+180*cos(
f*x+e)^3*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/
2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-270*s
in(f*x+e)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh
(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+17
8*cos(f*x+e)^5+180*cos(f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(
f*x+e)*2^(1/2))-486*cos(f*x+e)^4-45*2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)+648*cos(f*x+e)^3-390*cos(f*x+e)^2+90*cos(f*x+e))/sin(
f*x+e)^3/(-1+cos(f*x+e))^3*a^2
```

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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}}{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^5,x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*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((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**5,x)
```

```
[Out] Timed out
```

3.65 $\int \frac{(c-c\sec(e+fx))^4}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=185

$$\frac{2a^2c^4\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}+\frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{16\sqrt{2}c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{2ac^4\tan^3(e+fx)}{f(a\sec(e+fx)+a)^{3/2}}$$

```
[Out] 2*c^4*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f/a^(1/2)-16*c^4*ar
ctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/f/a^(1/
2)+14*c^4*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2*a*c^4*tan(f*x+e)^3/f/(a+a*s
ec(f*x+e))^(3/2)+2/5*a^2*c^4*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.28, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {3904, 3887, 479, 582, 522, 203}

$$\frac{2a^2c^4\tan^5(e+fx)}{5f(a\sec(e+fx)+a)^{5/2}}-\frac{2ac^4\tan^3(e+fx)}{f(a\sec(e+fx)+a)^{3/2}}+\frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{16\sqrt{2}c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^4/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*c^4*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*f)
 - (16*Sqrt[2]*c^4*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e
+ f*x]])])/(Sqrt[a]*f) + (14*c^4*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]])
 - (2*a*c^4*Tan[e + f*x]^3)/(f*(a + a*Sec[e + f*x])^(3/2)) + (2*a^2*c^4*Tan
[e + f*x]^5)/(5*f*(a + a*Sec[e + f*x])^(5/2))
```

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 479

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^(p
+ 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q) + 1)), x] - Dist[e^(2*n)/(b*d
*(m + n*(p + q) + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp
[a*c*(m - 2*n + 1) + (a*d*(m + n*(q - 1) + 1) + b*c*(m + n*(p - 1) + 1))*x^
n, x], x], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && NeQ[b*c - a*d, 0] && IG
tQ[n, 0] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 582

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*g^(n - 1)*(g*x)^(m
 - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q + 1)
```

```
+ 1)), x] - Dist[g^n/(b*d*(m + n*(p + q + 1) + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m - n + 1) + (a*f*d*(m + n*q + 1) + b*(f
*c*(m + n*p + 1) - e*d*(m + n*(p + q + 1) + 1)))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0] && GtQ[m, n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^4}{\sqrt{a+a\sec(e+fx)}}\,dx = \left(a^4c^4\right)\int \frac{\tan^8(e+fx)}{(a+a\sec(e+fx))^{9/2}}\,dx$$

$$= -\frac{\left(2a^4c^4\right)\text{Subst}\left(\int \frac{x^8}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= \frac{2a^2c^4\tan^5(e+fx)}{5f(a+a\sec(e+fx))^{5/2}} + \frac{\left(2a^2c^4\right)\text{Subst}\left(\int \frac{x^4\left(10+15ax^2\right)}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{5f}$$

$$= -\frac{2ac^4\tan^3(e+fx)}{f(a+a\sec(e+fx))^{3/2}} + \frac{2a^2c^4\tan^5(e+fx)}{5f(a+a\sec(e+fx))^{5/2}} - \frac{\left(2c^4\right)\text{Subst}\left(\int \frac{x^2\left(90a+105a^2x^2\right)}{\left(1+ax^2\right)\left(2+ax^2\right)}\right.}{15f}$$

$$= \frac{14c^4\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2ac^4\tan^3(e+fx)}{f(a+a\sec(e+fx))^{3/2}} + \frac{2a^2c^4\tan^5(e+fx)}{5f(a+a\sec(e+fx))^{5/2}} + \frac{\left(2c^4\right)\text{S}}{}$$

$$= \frac{14c^4\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2ac^4\tan^3(e+fx)}{f(a+a\sec(e+fx))^{3/2}} + \frac{2a^2c^4\tan^5(e+fx)}{5f(a+a\sec(e+fx))^{5/2}} - \frac{\left(2c^4\right)\text{S}}{}$$

$$= \frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f} - \frac{16\sqrt{2}c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f} + \frac{14c^4\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}$$

Mathematica [A] time = 1.45, size = 153, normalized size = 0.83

$$\frac{c^4\cot\left(\frac{1}{2}(e+fx)\right)\sec^3(e+fx)\left(-155\cos(e+fx)+96\cos(2(e+fx))-41\cos(3(e+fx))+20\cos^3(e+fx)\sqrt{\sec}\right.}{10f\sqrt{a(\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^4/Sqrt[a + a*Sec[e + f*x]],x]
```

[Out] (c^4*Cot[(e + f*x)/2]*(100 - 155*Cos[e + f*x] + 96*Cos[2*(e + f*x)] - 41*Co
s[3*(e + f*x)] + 20*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^3*Sqrt[-1
+ Sec[e + f*x]] - 160*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Cos[e
 + f*x]^3*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]^3)/(10*f*Sqrt[a*(1 + Sec[e
+ f*x])])

fricas [A] time = 1.26, size = 552, normalized size = 2.98

$$\left[\frac{40\sqrt{2}\left(ac^4\cos\left(fx+e\right)^3+ac^4\cos\left(fx+e\right)^2\right)\sqrt{-\frac{1}{a}}\log\left(\frac{2\sqrt{2}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{-\frac{1}{a}}\cos\left(fx+e\right)\sin\left(fx+e\right)+3\cos\left(fx+e\right)^2+2\cos\ldots}{\cos\left(fx+e\right)^2+2\cos\left(fx+e\right)+1}\right.}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")

[Out] [1/5*(40*sqrt(2)*(a*c^4*cos(f*x + e)^3 + a*c^4*cos(f*x + e)^2)*sqrt(-1/a)*l
og((2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x +
e)*sin(f*x + e) + 3*cos(f*x + e)^2 + 2*cos(f*x + e) - 1)/(cos(f*x + e)^2 +
2*cos(f*x + e) + 1)) - 5*(c^4*cos(f*x + e)^3 + c^4*cos(f*x + e)^2)*sqrt(-a)
*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*
(41*c^4*cos(f*x + e)^2 - 7*c^4*cos(f*x + e) + c^4)*sqrt((a*cos(f*x + e) + a
)/cos(f*x + e))*sin(f*x + e))/(a*f*cos(f*x + e)^3 + a*f*cos(f*x + e)^2), -2
/5*(5*(c^4*cos(f*x + e)^3 + c^4*cos(f*x + e)^2)*sqrt(a)*arctan(sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - (41*c^4*
cos(f*x + e)^2 - 7*c^4*cos(f*x + e) + c^4)*sqrt((a*cos(f*x + e) + a)/cos(f*
x + e))*sin(f*x + e) - 40*sqrt(2)*(a*c^4*cos(f*x + e)^3 + a*c^4*cos(f*x + e
)^2)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(s
qrt(a)*sin(f*x + e)))/sqrt(a))/(a*f*cos(f*x + e)^3 + a*f*cos(f*x + e)^2)]

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((c-c*sec(f*x+e))^4/(a+a*sec(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)
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
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/
t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p

```
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
 (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2
)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant si
gn by intervals (correct if the argument is real):Check [abs(cos(f*t_nostep
+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2
*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi
/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*
pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
 variableWarning, assuming -2*a+a is positive. Hint: run assume to make ass
umptions on a variableUnable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nost
ep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to ch
eck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t
_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi
/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unabl
e to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
(4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)
>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/
2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check
 sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_no
step/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_
nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable t
o check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*
pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-
4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)U
nable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check si
gn: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_noste
p/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nos
tep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to c
heck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/
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/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign
by intervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Eva
luation time: 1.97index.cc index_m i_lex_is_greater Error: Bad Argument Val
ue
```

maple [B] time = 1.97, size = 544, normalized size = 2.94

$$-\frac{c^4\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(5\sin(fx+e)\sqrt{2}\,(\cos^2(fx+e))\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)\left(-\frac{2\cos(fx+e)}{1+\cos(fx+e)}\right)^{\frac{5}{2}}+10\,\mathrm{s}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/20*c^4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(5*sin(f*x+e)*2^(1/2)*cos(f
*x+e)^2*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x
+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)+10*sin(f*x+e)*2^(1/2)*cos
(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x
+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)+80*(-2*cos(f*x+e)/(1+cos(
f*x+e)))^(5/2)*sin(f*x+e)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+
e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)^2+5*2^(1/2)*arctanh(1/2*(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+
cos(f*x+e)))^(5/2)*sin(f*x+e)+160*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*sin(
f*x+e)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/si
n(f*x+e))*cos(f*x+e)+80*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)
-cos(f*x+e)+1)/sin(f*x+e))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*sin(f*x+e)+
328*cos(f*x+e)^3-384*cos(f*x+e)^2+64*cos(f*x+e)-8)/cos(f*x+e)^2/sin(f*x+e)/
a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found %i
```

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

$$\int \frac{\left(c-\frac{c}{\cos(e+f\,x)}\right)^4}{\sqrt{a+\frac{a}{\cos(e+f\,x)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$c^4\left(\int\left(-\frac{4\sec\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\right)dx+\int\frac{6\sec^2\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\,dx+\int\left(-\frac{4\sec^3\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\right)dx+\int\frac{\sec}{\sqrt{a\sec}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**4/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] c**4*(Integral(-4*sec(e + f*x)/sqrt(a*sec(e + f*x) + a), x) + Integral(6*se
c(e + f*x)**2/sqrt(a*sec(e + f*x) + a), x) + Integral(-4*sec(e + f*x)**3/sq
rt(a*sec(e + f*x) + a), x) + Integral(sec(e + f*x)**4/sqrt(a*sec(e + f*x) +
 a), x) + Integral(1/sqrt(a*sec(e + f*x) + a), x))
```

3.66 $\int \frac{(c-c\sec(e+fx))^3}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=152

$$\frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{8\sqrt{2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{2ac^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{6c^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*c^3*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f/a^(1/2)-8*c^3*arc
tan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/f/a^(1/2
)+6*c^3*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2/3*a*c^3*tan(f*x+e)^3/f/(a+a*s
ec(f*x+e))^(3/2)
```

Rubi [A] time = 0.23, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 479, 582, 522, 203}

$$-\frac{2ac^3\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}+\frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{8\sqrt{2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}+\frac{6c^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^3/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*f)
 - (8*Sqrt[2]*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e +
 f*x]])])/(Sqrt[a]*f) + (6*c^3*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) -
 (2*a*c^3*Tan[e + f*x]^3)/(3*f*(a + a*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 479

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^(p
+ 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q) + 1)), x] - Dist[e^(2*n)/(b*d
*(m + n*(p + q) + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp
[a*c*(m - 2*n + 1) + (a*d*(m + n*(q - 1) + 1) + b*c*(m + n*(p - 1) + 1))*x^
n, x], x], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && NeQ[b*c - a*d, 0] && IG
tQ[n, 0] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 582

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*g^(n - 1)*(g*x)^(m
 - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q + 1)
+ 1)), x] - Dist[g^n/(b*d*(m + n*(p + q + 1) + 1)), Int[(g*x)^(m - n)*(a +
```

```
b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m - n + 1) + (a*f*d*(m + n*q + 1) + b*(f
*c*(m + n*p + 1) - e*d*(m + n*(p + q + 1) + 1)))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0] && GtQ[m, n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^3}{\sqrt{a+a\sec(e+fx)}}\,dx = -\left(\left(a^3c^3\right)\int \frac{\tan^6(e+fx)}{(a+a\sec(e+fx))^{7/2}}\,dx\right)$$

$$= \frac{\left(2a^3c^3\right)\text{Subst}\left(\int \frac{x^6}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx,x,-\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= -\frac{2ac^3\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{\left(2ac^3\right)\text{Subst}\left(\int \frac{x^2\left(6+9ax^2\right)}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx,x,-\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{3f}$$

$$= \frac{6c^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2ac^3\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} + \frac{\left(2c^3\right)\text{Subst}\left(\int \frac{18a+21a^2x^2}{\left(1+ax^2\right)\left(2+ax^2\right)}\,d\right.}{3af}$$

$$= \frac{6c^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2ac^3\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{\left(2c^3\right)\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx,x,-\frac{}{\sqrt{}}\right.}{f}$$

$$= \frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f} - \frac{8\sqrt{2}c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f} + \frac{6c^3\tan(e+fx)}{f\sqrt{a+a\sec(e+f}}$$

Mathematica [A] time = 1.33, size = 166, normalized size = 1.09

$$\frac{4c^3\cos\left(\frac{e}{2}\right)\cos(e)\cot\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\left(11\cos(e+fx)-5\cos(2(e+fx))+3\cos^2(e+fx)\sqrt{\sec(e+f}\right.}{3f\left(\cos\left(\frac{e}{2}\right)+\cos\left(\frac{3e}{2}\right)\right)\sqrt{a(s}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^3/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (4*c^3*Cos[e/2]*Cos[e]*Cot[(e + f*x)/2]*(-6 + 11*Cos[e + f*x] - 5*Cos[2*(e
+ f*x)] + 3*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e + f*x]^2*Sqrt[-1 + Sec[e
+ f*x]] - 12*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Cos[e + f*x]^2
```

```
*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]^2)/(3*f*(Cos[e/2] + Cos[(3*e)/2])*Sq
rt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 1.03, size = 518, normalized size = 3.41

$$\left[\frac{12\sqrt{2}\left(ac^3\cos\left(fx+e\right)^2+ac^3\cos\left(fx+e\right)\right)\sqrt{-\frac{1}{a}}\log\left(\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{-\frac{1}{a}}\cos(fx+e)\sin(fx+e)+3\cos(fx+e)^2+2\cos(fx-}{\cos(fx+e)^2+2\cos(fx+e)+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/3*(12*sqrt(2)*(a*c^3*cos(f*x + e)^2 + a*c^3*cos(f*x + e))*sqrt(-1/a)*log
((2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x + e)
*sin(f*x + e) + 3*cos(f*x + e)^2 + 2*cos(f*x + e) - 1)/(cos(f*x + e)^2 + 2*
cos(f*x + e) + 1)) - 3*(c^3*cos(f*x + e)^2 + c^3*cos(f*x + e))*sqrt(-a)*log
((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*c
os(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(10*
c^3*cos(f*x + e) - c^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e
))/(a*f*cos(f*x + e)^2 + a*f*cos(f*x + e)), -2/3*(3*(c^3*cos(f*x + e)^2 + c
^3*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos
(f*x + e)/(sqrt(a)*sin(f*x + e))) - (10*c^3*cos(f*x + e) - c^3)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 12*sqrt(2)*(a*c^3*cos(f*x + e)^
2 + a*c^3*cos(f*x + e))*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/sqrt(a))/(a*f*cos(f*x + e)^2 + a*f
*cos(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((c-c*sec(f*x+e))^3/(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
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ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
```

```
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
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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)Warning, integration of abs or sign assumes constant
sign by intervals (correct if the argument is real):Check [abs(t_nostep^2-1
)]Evaluation time: 1.67index.cc index_m i_lex_is_greater Error: Bad Argumen
t Value
```

maple [B] time = 1.92, size = 372, normalized size = 2.45

$$c^3\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(3\sin\left(fx+e\right)\cos\left(fx+e\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sqrt{2}+3\sqrt{2}\ a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/6*c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(3*sin(f*x+e)*cos(f*x+e)*arct
anh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))
*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*2^(1/2)+3*2^(1/2)*arctanh(1/2*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)
/(1+cos(f*x+e)))^(3/2)*sin(f*x+e)+24*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(3/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)
/sin(f*x+e))*cos(f*x+e)+24*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x
+e)-cos(f*x+e)+1)/sin(f*x+e))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*sin(f*x+
e)-40*cos(f*x+e)^2+44*cos(f*x+e)-4)/sin(f*x+e)/cos(f*x+e)/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found %i
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^3}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$-c^{3}\left(\int \frac{3\sec\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\,dx+\int\left(-\frac{3\sec^{2}\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\right)dx+\int \frac{\sec^{3}\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\,dx+\int\left(-\frac{}{\sqrt{a\sec\left(e\right.}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**3/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] -c**3*(Integral(3*sec(e + f*x)/sqrt(a*sec(e + f*x) + a), x) + Integral(-3*s
ec(e + f*x)**2/sqrt(a*sec(e + f*x) + a), x) + Integral(sec(e + f*x)**3/sqrt
(a*sec(e + f*x) + a), x) + Integral(-1/sqrt(a*sec(e + f*x) + a), x))
```

3.67 $\int \frac{(c-c\sec(e+fx))^2}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=119

$$\frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{4\sqrt{2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}+\frac{2c^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*c^2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f/a^(1/2)-4*c^2*arc
tan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/f/a^(1/2
)+2*c^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3904, 3887, 479, 522, 203}

$$\frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{4\sqrt{2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}+\frac{2c^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^2/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*f)
 - (4*Sqrt[2]*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e +
 f*x]])])/(Sqrt[a]*f) + (2*c^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[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 479

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^(p
+ 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q) + 1)), x] - Dist[e^(2*n)/(b*d
*(m + n*(p + q) + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp
[a*c*(m - 2*n + 1) + (a*d*(m + n*(q - 1) + 1) + b*c*(m + n*(p - 1) + 1))*x^
n, x], x], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && NeQ[b*c - a*d, 0] && IG
tQ[n, 0] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^2}{\sqrt{a+a\sec(e+fx)}}\,dx = \left(a^2c^2\right)\int \frac{\tan^4(e+fx)}{(a+a\sec(e+fx))^{5/2}}\,dx$$
$$= -\frac{\left(2a^2c^2\right)\text{Subst}\left(\int \frac{x^4}{(1+ax^2)(2+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= \frac{2c^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{\left(2c^2\right)\text{Subst}\left(\int \frac{2+3ax^2}{(1+ax^2)(2+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= \frac{2c^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{\left(2c^2\right)\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} + \frac{\left(8c^2\right)\text{Subst}\left(\int\right.}{}$$
$$= \frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f} - \frac{4\sqrt{2}c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f} + \frac{2c^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}$$

Mathematica [A] time = 0.51, size = 124, normalized size = 1.04

$$\frac{2c^2\cot\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\left(-\cos(e+fx)+\cos(e+fx)\sqrt{\sec(e+fx)-1}\,\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)-2\sqrt{2}\,c\right.}{f\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^2/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*c^2*Cot[(e + f*x)/2]*(1 - Cos[e + f*x] + ArcTan[Sqrt[-1 + Sec[e + f*x]]]
*Cos[e + f*x]*Sqrt[-1 + Sec[e + f*x]] - 2*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e +
f*x]]/Sqrt[2]]*Cos[e + f*x]*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x])/(f*Sqrt[
a*(1 + Sec[e + f*x])])
```

fricas [A] time = 0.73, size = 438, normalized size = 3.68

$$\left[\frac{2c^2\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sin(fx+e) + 2\sqrt{2}\left(ac^2\cos(fx+e)+ac^2\right)\sqrt{-\frac{1}{a}}\log\left(\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{-\frac{1}{a}}\cos(fx+e)\sin(fx+e)+3}{\cos(fx+e)^2+2\cos(fx+e}\right.}{af\cos(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [(2*c^2*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) + 2*sqrt(2)*(a
*c^2*cos(f*x + e) + a*c^2)*sqrt(-1/a)*log((2*sqrt(2)*sqrt((a*cos(f*x + e) +
 a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) + 3*cos(f*x + e)^2 +
 2*cos(f*x + e) - 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) - (c^2*cos(f*x
+ e) + c^2)*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos
(f*x + e) + 1)))/(a*f*cos(f*x + e) + a*f), 2*(c^2*sqrt((a*cos(f*x + e) + a)
/cos(f*x + e))*sin(f*x + e) - (c^2*cos(f*x + e) + c^2)*sqrt(a)*arctan(sqrt(
(a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + 2
*sqrt(2)*(a*c^2*cos(f*x + e) + a*c^2)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) +
 a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/sqrt(a))/(a*f*cos(f*
x + e) + a*f)]
```

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((c-c*sec(f*x+e))^2/(a+a*sec(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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g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check
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o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableUnab
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```
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(2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning,
integration of abs or sign assumes constant sign by intervals (correct if t
he argument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.33index.cc
 index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.90, size = 329, normalized size = 2.76

$$-\frac{c^2\left(\sqrt{2}\,\cos\left(fx+e\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx}{1+\cos(f}}}{2c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -c^2/f*(2^(1/2)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2
*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+(-2*co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*2^(1/2)+4*(-2*cos(f*x+e)/(1+cos(f*x+e))
```

```
)^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/s
in(f*x+e))*cos(f*x+e)+4*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-2*sin(f*x+e
))*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/(1+cos(f*x+e))/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found %i
```

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

$$\int \frac{\left(c-\frac{c}{\cos(e+f\,x)}\right)^2}{\sqrt{a+\frac{a}{\cos(e+f\,x)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$c^2\left(\int\left(-\frac{2\sec\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\right)dx+\int\frac{\sec^2\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\,dx+\int\frac{1}{\sqrt{a\sec\left(e+fx\right)+a}}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**2/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] c**2*(Integral(-2*sec(e + f*x)/sqrt(a*sec(e + f*x) + a), x) + Integral(sec(
e + f*x)**2/sqrt(a*sec(e + f*x) + a), x) + Integral(1/sqrt(a*sec(e + f*x) +
 a), x))
```

3.68 $\int \frac{c-c\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=87

$$\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{2\sqrt{2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f/a^(1/2)-2*c*arctan(
1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/f/a^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {3904, 3887, 481, 203}

$$\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}-\frac{2\sqrt{2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*f) -
 (2*Sqrt[2]*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x
]])])/(Sqrt[a]*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 481

```
Int[((e_.)*(x_))^(m_.)/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(n_))),
 x_Symbol] :> -Dist[(a*e^n)/(b*c - a*d), Int[(e*x)^(m - n)/(a + b*x^n), x],
 x] + Dist[(c*e^n)/(b*c - a*d), Int[(e*x)^(m - n)/(c + d*x^n), x], x] /; Fr
eeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LeQ[n, m,
2*n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{c-c\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx = -\left((ac)\int \frac{\tan^2(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx\right)$$
$$= \frac{(2ac)\,\text{Subst}\left(\int \frac{x^2}{(1+ax^2)(2+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{(2c)\,\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} + \frac{(4c)\,\text{Subst}\left(\int \frac{1}{2+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+f}}\right.}{f}$$
$$= \frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f} - \frac{2\sqrt{2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}f}$$

Mathematica [A] time = 0.30, size = 82, normalized size = 0.94

$$\frac{2c\cot\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)-1}\left(\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)-\sqrt{2}\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)-1}}{\sqrt{2}}\right)\right)}{f\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*c*(ArcTan[Sqrt[-1 + Sec[e + f*x]]] - Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*
x]]/Sqrt[2]])*Cot[(e + f*x)/2]*Sqrt[-1 + Sec[e + f*x]])/(f*Sqrt[a*(1 + Sec[
e + f*x])])
```

fricas [A] time = 0.60, size = 298, normalized size = 3.43

$$\left[\frac{\sqrt{2}ac\sqrt{-\frac{1}{a}}\log\left(\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{-\frac{1}{a}}\cos(fx+e)\sin(fx+e)+3\cos(fx+e)^2+2\cos(fx+e)-1}{\cos(fx+e)^2+2\cos(fx+e)+1}\right)-\sqrt{-a}c\log\left(\frac{2a\cos(fx+e)^2+2\sqrt{-a}\ldots}{\ldots}\right)}{af}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(2)*a*c*sqrt(-1/a)*log((2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) + 3*cos(f*x + e)^2 + 2*cos(f*x +
e) - 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) - sqrt(-a)*c*log((2*a*cos(f*
x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*
sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/(a*f), 2*(sqrt(2)*s
qrt(a)*c*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e
)/(sqrt(a)*sin(f*x + e))) - sqrt(a)*c*arctan(sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))))/(a*f)]
```

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((c-c*sec(f*x+e))/(a+a*sec(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)
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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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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integratio
n of abs or sign assumes constant sign by intervals (correct if the argumen
t is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t
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p/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nos
tep/2)Warning, assuming -2*a+a is positive. Hint: run assume to make assump
tions on a variableWarning, assuming -2*a+a is positive. Hint: run assume t
o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
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rning, integration of abs or sign assumes constant sign by intervals (corre
ct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.15i
ndex.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [A] time = 1.52, size = 144, normalized size = 1.66

$$-\frac{c\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\left(\sqrt{2}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+2\ln\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sin\left(fx+e\right)-\cos\left(fx-\right.}{\sin\left(fx+e\right)}\right.\right.}{fa}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*(2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos
(f*x+e)*2^(1/2))+2*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(
f*x+e)+1)/sin(f*x+e)))/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found %i
```

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

$$\int \frac{c-\frac{c}{\cos\left(e+f\,x\right)}}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$-c\left(\int \frac{\sec\left(e+fx\right)}{\sqrt{a\sec\left(e+fx\right)+a}}\,dx+\int\left(-\frac{1}{\sqrt{a\sec\left(e+fx\right)+a}}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] -c*(Integral(sec(e + f*x)/sqrt(a*sec(e + f*x) + a), x) + Integral(-1/sqrt(a
*sec(e + f*x) + a), x))
```

3.69 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))}\,dx$

Optimal. Leaf size=121

$$\frac{\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{acf}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}cf}-\frac{\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{2}\sqrt{a}cf}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c/f/a^(1/2)-1/2*arctan(
1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/c/f*2^(1/2)/a^(1/2)+
cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/a/c/f
```

Rubi [A] time = 0.19, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3904, 3887, 480, 522, 203}

$$\frac{\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{acf}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}cf}-\frac{\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{2}\sqrt{a}cf}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*c*f) -
 ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])]/(Sqrt[2]
*Sqrt[a]*c*f) + (Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(a*c*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 480

```
Int[((e_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)
)^(q_), x_Symbol] :> Simp[((e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q
 + 1))/(a*c*e*(m + 1)), x] - Dist[1/(a*c*e^n*(m + 1)), Int[(e*x)^(m + n)*(a
 + b*x^n)^p*(c + d*x^n)^q*Simp[(b*c + a*d)*(m + n + 1) + n*(b*c*p + a*d*q)
+ b*d*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, p, q
}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b
, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))}\,dx = -\frac{\int \cot^2(e+fx)\sqrt{a+a\sec(e+fx)}\,dx}{ac}$$

$$= \frac{2\,\text{Subst}\left(\int \frac{1}{x^2(1+ax^2)(2+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{acf}$$

$$= \frac{\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{acf} + \frac{\text{Subst}\left(\int \frac{-3a-a^2x^2}{(1+ax^2)(2+ax^2)}\,dx, x, \ldots\right.}{acf}$$

$$= \frac{\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{acf} + \frac{\text{Subst}\left(\int \frac{1}{2+ax^2}\,dx, x, -\frac{\tan(\ldots}{\sqrt{a+a\,\text{se}\ldots}}\right.}{cf}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,cf} - \frac{\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{2}\sqrt{a}\,cf} + \frac{\cot(e+f\ldots}{}$$

Mathematica [A] time = 0.57, size = 101, normalized size = 0.83

$$\frac{\cot\left(\frac{1}{2}(e+fx)\right)\left(4\sqrt{\sec(e+fx)-1}\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)-\sqrt{2}\sqrt{\sec(e+fx)-1}\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)-1}}{\sqrt{2}}\right)+2\ldots\right.}{2cf\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])),x]
```

```
[Out] (Cot[(e + f*x)/2]*(2 + 4*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Sqrt[-1 + Sec[e +
f*x]] - Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Sqrt[-1 + Sec[e + f
*x]]))/(2*c*f*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 0.62, size = 436, normalized size = 3.60

$$\left[\frac{\sqrt{2}\,a\sqrt{-\frac{1}{a}}\log\left(\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{-\frac{1}{a}}\cos(fx+e)\sin(fx+e)+3\cos(fx+e)^2+2\cos(fx+e)-1}{\cos(fx+e)^2+2\cos(fx+e)+1}\right)\sin(fx+e)-2\sqrt{-a}\log\left(-\frac{8a\ldots}{}\right.}{4acf}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(sqrt(2)*a*sqrt(-1/a)*log((2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x
 + e))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) + 3*cos(f*x + e)^2 + 2*cos(f*x
```

```
+ e) - 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1))*sin(f*x + e) - 2*sqrt(-a)*
log(-(8*a*cos(f*x + e)^3 + 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqr
t((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(
cos(f*x + e) + 1))*sin(f*x + e) + 4*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
*cos(f*x + e))/(a*c*f*sin(f*x + e)), 1/2*(sqrt(2)*sqrt(a)*arctan(sqrt(2)*sq
rt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))*
sin(f*x + e) + 2*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x
 + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))
*sin(f*x + e) + 2*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e))/(a*
c*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(1/(c-c*sec(f*x+e))/(a+a*sec(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)
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
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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integratio
n of abs or sign assumes constant sign by intervals (correct if the argumen
t is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t
_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi
/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unabl
e to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
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step/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
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2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)U
nable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check si
gn: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_noste
p/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nos
tep/2)Warning, assuming -2*a+a is positive. Hint: run assume to make assump
tions on a variableWarning, assuming -2*a+a is positive. Hint: run assume t
o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableUnable to check s
ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nost
ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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i/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Ev
aluation time: 0.99index.cc index_m i_lex_is_greater Error: Bad Argument Va
lue
```

maple [A] time = 1.72, size = 194, normalized size = 1.60

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(2\sqrt{2}\,\sin\left(fx+e\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}+\sin\left(fx+e\right)\sqrt{-\frac{2\cos\left(f\right.}{1+\cos\left(f\right.}}\right.}{2cf\sin\left(fx+e\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/2/c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(2*2^(1/2)*sin(f*x+e)*arctanh(
1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/si
n(f*x+e))-2*cos(f*x+e))/sin(f*x+e)/a
```

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

$$-\int \frac{1}{\sqrt{a\sec\left(fx+e\right)+a}\left(c\sec\left(fx+e\right)-c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(1/(sqrt(a*sec(f*x + e) + a)*(c*sec(f*x + e) - c)), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))), x)
```

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

$$-\frac{\int \frac{1}{\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)-\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] -Integral(1/(sqrt(a*sec(e + f*x) + a)*sec(e + f*x) - sqrt(a*sec(e + f*x) +
a)), x)/c
```

3.70 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=161

$$-\frac{\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3a^2c^2f}+\frac{3\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{2ac^2f}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}\,c^2f}-\frac{\tan^{-1}\left(\frac{\sqrt{a}\tan(}{\sqrt{2}\sqrt{a\sec(}}\right.}{2\sqrt{2}\sqrt{a}\,c^2}$$

```
[Out] -1/3*cot(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a^2/c^2/f+2*arctan(a^(1/2)*tan(f*x
+e)/(a+a*sec(f*x+e))^(1/2))/c^2/f/a^(1/2)-1/4*arctan(1/2*a^(1/2)*tan(f*x+e)
*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/c^2/f*2^(1/2)/a^(1/2)+3/2*cot(f*x+e)*(a+a*
sec(f*x+e))^(1/2)/a/c^2/f
```

Rubi [A] time = 0.23, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 480, 583, 522, 203}

$$-\frac{\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{3a^2c^2f}+\frac{3\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{2ac^2f}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}\,c^2f}-\frac{\tan^{-1}\left(\frac{\sqrt{a}\tan(}{\sqrt{2}\sqrt{a\sec(}}\right.}{2\sqrt{2}\sqrt{a}\,c^2}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*c^2*f)
 - ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])]/(2*Sqr
t[2]*Sqrt[a]*c^2*f) + (3*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(2*a*c^2*f)
 - (Cot[e + f*x]^3*(a + a*Sec[e + f*x])^(3/2))/(3*a^2*c^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 480

```
Int[((e_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)
)^(q_), x_Symbol] :> Simp[((e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q
 + 1))/(a*c*e*(m + 1)), x] - Dist[1/(a*c*e^n*(m + 1)), Int[(e*x)^(m + n)*(a
 + b*x^n)^p*(c + d*x^n)^q*Simp[(b*c + a*d)*(m + n + 1) + n*(b*c*p + a*d*q)
+ b*d*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, p, q
}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b
, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 583

```
Int[((g_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_
))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(e*(g*x)^(m + 1)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*c*g*(m + 1)), x] + Dist[1/(a*c*g^n*(
m + 1)), Int[(g*x)^(m + n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m + 1) -
```

```
 e*(b*c + a*d)*(m + n + 1) - e*n*(b*c*p + a*d*q) - b*e*d*(m + n*(p + q + 2)
 + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0
] && LtQ[m, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^2}\,dx = \frac{\int \cot^4(e+fx)(a+a\sec(e+fx))^{3/2}\,dx}{a^2c^2}$$

$$= -\frac{2\,\text{Subst}\left(\int \frac{1}{x^4(1+ax^2)(2+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^2c^2f}$$

$$= -\frac{\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{3a^2c^2f} - \frac{\text{Subst}\left(\int \frac{-9a-3a^2x^2}{x^2(1+ax^2)(2+ax^2)}\right.}{3a^2c}$$

$$= \frac{3\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{2ac^2f} - \frac{\cot^3(e+fx)(a+a\sec(e+}{3a^2c^2f}$$

$$= \frac{3\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{2ac^2f} - \frac{\cot^3(e+fx)(a+a\sec(e+}{3a^2c^2f}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,c^2f} - \frac{\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{2\sqrt{2}\sqrt{a}\,c^2f} + \frac{3\cot(e+}{}$$

Mathematica [C] time = 24.12, size = 5576, normalized size = 34.63

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^2),x]
[Out] Result too large to show
```

fricas [A] time = 0.60, size = 520, normalized size = 3.23

$$\left[-\frac{3\sqrt{2}\sqrt{-a}\left(\cos\left(fx+e\right)-1\right)\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)-3a\cos\left(fx+e\right)^{2}-2a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)^{2}+2\cos\left(fx+e\right)+1}\right)\sin\left(fx+e\right)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] [-1/24*(3*sqrt(2)*sqrt(-a)*(cos(f*x + e) - 1)*log(-(2*sqrt(2)*sqrt(-a)*sqrt
((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(f*x
 + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1))*sin(
f*x + e) + 12*sqrt(-a)*(cos(f*x + e) - 1)*log(-(8*a*cos(f*x + e)^3 + 4*(2*c
os(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
e))*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) -
 4*(11*cos(f*x + e)^2 - 9*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e)))/((a*c^2*f*cos(f*x + e) - a*c^2*f)*sin(f*x + e)), 1/12*(3*sqrt(2)*sqrt
(a)*(cos(f*x + e) - 1)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))*sin(f*x + e) + 12*sqrt(a)*(cos(f*x
+ e) - 1)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
+ e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) +
 2*(11*cos(f*x + e)^2 - 9*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e)))/((a*c^2*f*cos(f*x + e) - a*c^2*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(1/(c-c*sec(f*x+e))^2/(a+a*sec(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)
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
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/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sig
n: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep
```

```
/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nost
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/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unabl
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(2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)
>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint: run assume t
o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
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sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableUnab
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t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Discon
tinuities at zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
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tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (2*p
i/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to che
ck sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^2-1)]Evaluation time: 1.03index.cc index_m i_lex_is_greater Error: Ba
d Argument Value
```

maple [B] time = 1.95, size = 377, normalized size = 2.34

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(12\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+3\sqrt{-\frac{2\cdots}{1+\cdots}}\cdots\right)}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/12/c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(12*sin(f*x+e)*cos(f*x+e)^2*
2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+
cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+3*(-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e
)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)-12*2^(1/2)*sin(f*x+e)*arctanh(1/2*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)-3*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(
f*x+e))-22*cos(f*x+e)^3-4*cos(f*x+e)^2+18*cos(f*x+e))/sin(f*x+e)^3/a
```

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

$$\int \frac{1}{\sqrt{a\sec\left(fx+e\right)+a}\left(c\sec\left(fx+e\right)-c\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/(sqrt(a*sec(f*x + e) + a)*(c*sec(f*x + e) - c)^2), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^2),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^2), x)
```

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

$$\frac{\int \frac{1}{\sqrt{a\sec\left(e+fx\right)+a}\sec^2\left(e+fx\right)-2\sqrt{a\sec\left(e+fx\right)+a}\sec\left(e+fx\right)+\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))**2/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**2 - 2*sqrt(a*sec(e + f*x
) + a)*sec(e + f*x) + sqrt(a*sec(e + f*x) + a)), x)/c**2
```

3.71 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=196

$$\frac{\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5a^3c^3f}-\frac{\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{2a^2c^3f}+\frac{7\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{4ac^3f}+\frac{2\tan^{-1}}{}$$

```
[Out] -1/2*cot(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a^2/c^3/f+1/5*cot(f*x+e)^5*(a+a*se
c(f*x+e))^(5/2)/a^3/c^3/f+2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2
))/c^3/f/a^(1/2)-1/8*arctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))
^(1/2))/c^3/f*2^(1/2)/a^(1/2)+7/4*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/a/c^3/f
```

Rubi [A] time = 0.28, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 480, 583, 522, 203}

$$\frac{\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{5a^3c^3f}-\frac{\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{2a^2c^3f}+\frac{7\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{4ac^3f}+\frac{2\tan^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^3),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*c^3*f)
 - ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])]/(4*Sqr
t[2]*Sqrt[a]*c^3*f) + (7*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(4*a*c^3*f)
 - (Cot[e + f*x]^3*(a + a*Sec[e + f*x])^(3/2))/(2*a^2*c^3*f) + (Cot[e + f*x
]^5*(a + a*Sec[e + f*x])^(5/2))/(5*a^3*c^3*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 480

```
Int[((e_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)
)^(q_), x_Symbol] :> Simp[((e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q
 + 1))/(a*c*e*(m + 1)), x] - Dist[1/(a*c*e^n*(m + 1)), Int[(e*x)^(m + n)*(a
 + b*x^n)^p*(c + d*x^n)^q*Simp[(b*c + a*d)*(m + n + 1) + n*(b*c*p + a*d*q)
+ b*d*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, p, q
}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b
, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 583

```
Int[((g_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_
))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(e*(g*x)^(m + 1)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*c*g*(m + 1)), x] + Dist[1/(a*c*g^n*(
```

```
m + 1)), Int[(g*x)^(m + n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m + 1) -
 e*(b*c + a*d)*(m + n + 1) - e*n*(b*c*p + a*d*q) - b*e*d*(m + n*(p + q + 2)
 + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0
] && LtQ[m, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^3}\,dx = -\frac{\int \cot^6(e+fx)(a+a\sec(e+fx))^{5/2}\,dx}{a^3c^3}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \frac{1}{x^6(1+ax^2)(2+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^3c^3f}$$

$$= \frac{\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{5a^3c^3f} + \frac{\mathrm{Subst}\left(\int \frac{-15a-5a^2x^2}{x^4(1+ax^2)(2+ax^2)}\right.}{5a^3c^3}$$

$$= -\frac{\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{2a^2c^3f} + \frac{\cot^5(e+fx)(a+a\sec(e}{5a^3c^3f}$$

$$= \frac{7\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{4ac^3f} - \frac{\cot^3(e+fx)(a+a\sec(e+}{2a^2c^3f}$$

$$= \frac{7\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{4ac^3f} - \frac{\cot^3(e+fx)(a+a\sec(e+}{2a^2c^3f}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,c^3f} - \frac{\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{4\sqrt{2}\sqrt{a}\,c^3f} + \frac{7\cot(e+}{}$$

Mathematica [C] time = 23.74, size = 5592, normalized size = 28.53

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^3),x]
[Out] Result too large to show
```

fricas [A] time = 0.61, size = 608, normalized size = 3.10

$$\left[-\frac{5\sqrt{2}\left(\cos\left(fx+e\right)^{2}-2\cos\left(fx+e\right)+1\right)\sqrt{-a}\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)-3a\cos(fx+e)^{2}-2a\cos(f\cdots}{\cos(fx+e)^{2}+2\cos(fx+e)+1}\right.}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] [-1/80*(5*sqrt(2)*(cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sqrt(-a)*log(-(2*sq
rt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x
 + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f*x + e)^2 + 2*cos(
f*x + e) + 1))*sin(f*x + e) + 40*(cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sqrt
(-a)*log(-(8*a*cos(f*x + e)^3 + 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(-a
)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x + e) +
 a)/(cos(f*x + e) + 1))*sin(f*x + e) - 4*(49*cos(f*x + e)^3 - 80*cos(f*x +
e)^2 + 35*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((a*c^3*f*
cos(f*x + e)^2 - 2*a*c^3*f*cos(f*x + e) + a*c^3*f)*sin(f*x + e)), 1/40*(5*s
qrt(2)*(cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sqrt(a)*arctan(sqrt(2)*sqrt((a
*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))*sin(f
*x + e) + 40*(cos(f*x + e)^2 - 2*cos(f*x + e) + 1)*sqrt(a)*arctan(2*sqrt(a)
*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos
(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*(49*cos(f*x + e)^3 - 80
*cos(f*x + e)^2 + 35*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))
/((a*c^3*f*cos(f*x + e)^2 - 2*a*c^3*f*cos(f*x + e) + a*c^3*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(1/(c-c*sec(f*x+e))^3/(a+a*sec(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)
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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step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
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step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
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pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
 to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (
2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>
(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (4*pi/t_nos
```

```
tep/2)>(-4*pi/t_nostep/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)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation ti
me: 1.28index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 2.57, size = 545, normalized size = 2.78

$$-\frac{\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\,(1+\cos(fx+e))^2\left(40\sin(fx+e)\left(\cos^2(fx+e)\right)\sqrt{2}\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\ldots}{2\cos\ldots}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/40/c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(1+cos(f*x+e))^2*(40*sin(f*
x+e)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-80*cos(
f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+5*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*si
n(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+40*2^(1/2)*sin(f
*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e
)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)-10*cos(f*x+e)*sin(f*x+e)*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-98*cos(f*x+e)^3+5*sin(f*x+e)*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f
*x+e)-cos(f*x+e)+1)/sin(f*x+e))+160*cos(f*x+e)^2-70*cos(f*x+e))/sin(f*x+e)^
5/a
```

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

$$-\int \frac{1}{\sqrt{a\sec\left(fx+e\right)+a}\left(c\sec\left(fx+e\right)-c\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] -integrate(1/(sqrt(a*sec(f*x + e) + a)*(c*sec(f*x + e) - c)^3), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+fx\right)}}\left(c-\frac{c}{\cos\left(e+fx\right)}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^3),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^3), x)
```

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

$$-\frac{\int \frac{1}{\sqrt{a\sec\left(e+fx\right)+a}\sec^3\left(e+fx\right)-3\sqrt{a\sec\left(e+fx\right)+a}\sec^2\left(e+fx\right)+3\sqrt{a\sec\left(e+fx\right)+a}\sec\left(e+fx\right)-\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))**3/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] -Integral(1/(sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**3 - 3*sqrt(a*sec(e + f*
x) + a)*sec(e + f*x)**2 + 3*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) - sqrt(a*
sec(e + f*x) + a)), x)/c**3
```

3.72 $\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=203

$$\frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}+\frac{12\sqrt{2}\,c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}+\frac{8c^4\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}-\frac{14c^4\tan(e+fx)}{af\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*c^4*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/f+12*c^4*ar
ctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/a^(3/2)
/f-14*c^4*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)+8/3*c^4*tan(f*x+e)^3/f/(a+a
*sec(f*x+e))^(3/2)-a*c^4*sec(1/2*e+1/2*f*x)^2*sin(f*x+e)*tan(f*x+e)^4/f/(a+
a*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.29, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 470, 582, 522, 203}

$$\frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}+\frac{12\sqrt{2}\,c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}+\frac{8c^4\tan^3(e+fx)}{3f(a\sec(e+fx)+a)^{3/2}}-\frac{14c^4\tan(e+fx)}{af\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*c^4*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*f)
 + (12*Sqrt[2]*c^4*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e
+ f*x]])])/(a^(3/2)*f) - (14*c^4*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]
]) + (8*c^4*Tan[e + f*x]^3)/(3*f*(a + a*Sec[e + f*x])^(3/2)) - (a*c^4*Sec[(
e + f*x)/2]^2*Sin[e + f*x]*Tan[e + f*x]^4)/(f*(a + a*Sec[e + f*x])^(5/2))
```

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 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 582

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*g^(n - 1)*(g*x)^(m
```

```
 - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q + 1)
+ 1)), x] - Dist[g^n/(b*d*(m + n*(p + q + 1) + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m - n + 1) + (a*f*d*(m + n*q + 1) + b*(f
*c*(m + n*p + 1) - e*d*(m + n*(p + q + 1) + 1)))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0] && GtQ[m, n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^{3/2}}\,dx &= \left(a^4c^4\right)\int \frac{\tan^8(e+fx)}{(a+a\sec(e+fx))^{11/2}}\,dx\\
&= -\frac{\left(2a^3c^4\right)\text{Subst}\left(\int \frac{x^8}{\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}\\
&= -\frac{ac^4\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^4(e+fx)}{f(a+a\sec(e+fx))^{5/2}} - \frac{\left(ac^4\right)\text{Subst}\left(\int \frac{x^4\left(10+8ax^2\right)}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx, x\right.}{f}\\
&= \frac{8c^4\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{ac^4\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^4(e+fx)}{f(a+a\sec(e+fx))^{5/2}} + \frac{c^4\,\text{Sub}}{}\\
&= -\frac{14c^4\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} + \frac{8c^4\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{ac^4\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+}{f(a+a\sec(e+f}\\
&= -\frac{14c^4\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} + \frac{8c^4\tan^3(e+fx)}{3f(a+a\sec(e+fx))^{3/2}} - \frac{ac^4\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+}{f(a+a\sec(e+f}\\
&= \frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} + \frac{12\sqrt{2}\,c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} - \frac{14c^4\tan(e+fx}{af\sqrt{a+a\sec(e+}}
\end{aligned}$$

Mathematica [A] time = 1.58, size = 196, normalized size = 0.97

$$\frac{c^4\csc\left(\frac{1}{2}(e+fx)\right)\sec\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\left(20\cos(e+fx)-26\cos(2(e+fx))+28\cos(3(e+fx))+6\left(\cos\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (c^4*Csc[(e + f*x)/2]*Sec[(e + f*x)/2]*(-22 + 20*Cos[e + f*x] - 26*Cos[2*(e
 + f*x)] + 28*Cos[3*(e + f*x)] + 6*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*(Cos[(e
+ f*x)/2] + Cos[(3*(e + f*x))/2])^2*Sqrt[-1 + Sec[e + f*x]] + 36*Sqrt[2]*Ar
cTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*(Cos[(e + f*x)/2] + Cos[(3*(e + f*x))
/2])^2*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x]^2)/(12*a*f*Sqrt[a*(1 + Sec[e +
 f*x])])
```

fricas [A] time = 1.87, size = 634, normalized size = 3.12

$$\left[\frac{18\sqrt{2}\left(ac^4\cos\left(fx+e\right)^3+2\,ac^4\cos\left(fx+e\right)^2+ac^4\cos\left(fx+e\right)\right)\sqrt{-\frac{1}{a}}\,\log\left(-\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{-\frac{1}{a}}\cos(fx+e)\sin\ldots}{\cos(fx+e)^2+2\ldots}\right.}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [1/3*(18*sqrt(2)*(a*c^4*cos(f*x + e)^3 + 2*a*c^4*cos(f*x + e)^2 + a*c^4*cos
(f*x + e))*sqrt(-1/a)*log(-(2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) - 3*cos(f*x + e)^2 - 2*cos(f*x + e)
 + 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) - 3*(c^4*cos(f*x + e)^3 + 2*c^
4*cos(f*x + e)^2 + c^4*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*s
qrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) +
 a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*(28*c^4*cos(f*x + e)^2 + 15*c^
4*cos(f*x + e) - c^4)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))
/(a^2*f*cos(f*x + e)^3 + 2*a^2*f*cos(f*x + e)^2 + a^2*f*cos(f*x + e)), -2/3
*(3*(c^4*cos(f*x + e)^3 + 2*c^4*cos(f*x + e)^2 + c^4*cos(f*x + e))*sqrt(a)*
arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*
x + e))) + (28*c^4*cos(f*x + e)^2 + 15*c^4*cos(f*x + e) - c^4)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sin(f*x + e) + 18*sqrt(2)*(a*c^4*cos(f*x + e)^3
 + 2*a*c^4*cos(f*x + e)^2 + a*c^4*cos(f*x + e))*arctan(sqrt(2)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/sqrt(a))/(
a^2*f*cos(f*x + e)^3 + 2*a^2*f*cos(f*x + e)^2 + a^2*f*cos(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((c-c*sec(f*x+e))^4/(a+a*sec(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)
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
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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_no
step/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable t
o check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*
pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assume
s constant sign by intervals (correct if the argument is real):Check [abs(c
os(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nos
tep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to c
heck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/
t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
 (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2
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onstant sign by intervals (correct if the argument is real):Check [abs(t_no
step^2-1)]Evaluation time: 2.04index.cc index_m i_lex_is_greater Error: Bad
 Argument Value
```

maple [B] time = 1.97, size = 552, normalized size = 2.72

$$-\frac{c^4\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\,\left(-1+\cos\left(fx+e\right)\right)\left(3\,\mathrm{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)\left(-\frac{2\cos(fx+e)}{1+\cos(fx+e)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)\left(\cos^2\left(\right.\right.\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/6*c^4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))*(3*arctanh(1
/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*sin(f*x+e)*cos(f*x+e)^2*2^(1/2)-36*cos(f*x
+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)
))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*sin(f*x+e)+6*sin(f*x+e)*cos(f
*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e
)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*2^(1/2)-72*sin(f*x+e)*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*si
n(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)+3*2^(1/2)*arctanh(1/2*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)
/(1+cos(f*x+e)))^(3/2)*sin(f*x+e)-36*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2
)*sin(f*x+e)+112*cos(f*x+e)^3-52*cos(f*x+e)^2-64*cos(f*x+e)+4)/cos(f*x+e)/s
in(f*x+e)^3/a^2
```

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((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^4}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$c^4\left(\int\left(-\frac{4\sec\left(e+fx\right)}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a\sqrt{a\sec\left(e+fx\right)+a}}\right)dx+\int\frac{6\sec^2\left(e+\right.}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**4/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] c**4*(Integral(-4*sec(e + f*x)/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a
*sqrt(a*sec(e + f*x) + a)), x) + Integral(6*sec(e + f*x)**2/(a*sqrt(a*sec(e
 + f*x) + a)*sec(e + f*x) + a*sqrt(a*sec(e + f*x) + a)), x) + Integral(-4*s
ec(e + f*x)**3/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a*sqrt(a*sec(e +
f*x) + a)), x) + Integral(sec(e + f*x)**4/(a*sqrt(a*sec(e + f*x) + a)*sec(e
 + f*x) + a*sqrt(a*sec(e + f*x) + a)), x) + Integral(1/(a*sqrt(a*sec(e + f*
x) + a)*sec(e + f*x) + a*sqrt(a*sec(e + f*x) + a)), x))
```

3.73 $\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=169

$$\frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}+\frac{2\sqrt{2}\,c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{4c^3\tan(e+fx)}{af\sqrt{a\sec(e+fx)+a}}+\frac{c^3\sin(e+fx)\tan^2(e+fx)\,\mathrm{s}}{f(a\sec(e+fx)+}$$

```
[Out] 2*c^3*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/f+2*c^3*arc
tan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/a^(3/2)/
f-4*c^3*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)+c^3*sec(1/2*e+1/2*f*x)^2*sin(
f*x+e)*tan(f*x+e)^2/f/(a+a*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.24, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 470, 582, 522, 203}

$$\frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}+\frac{2\sqrt{2}\,c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{4c^3\tan(e+fx)}{af\sqrt{a\sec(e+fx)+a}}+\frac{c^3\sin(e+fx)\tan^2(e+fx)\,\mathrm{s}}{f(a\sec(e+fx)+}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*f)
 + (2*Sqrt[2]*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e +
 f*x]])])/(a^(3/2)*f) - (4*c^3*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]])
 + (c^3*Sec[(e + f*x)/2]^2*Sin[e + f*x]*Tan[e + f*x]^2)/(f*(a + a*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 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 582

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*g^(n - 1)*(g*x)^(m
```

```
 - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q + 1)
+ 1)), x] - Dist[g^n/(b*d*(m + n*(p + q + 1) + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m - n + 1) + (a*f*d*(m + n*q + 1) + b*(f
*c*(m + n*p + 1) - e*d*(m + n*(p + q + 1) + 1)))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0] && GtQ[m, n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^{3/2}}\,dx = -\left(\left(a^3c^3\right)\int \frac{\tan^6(e+fx)}{(a+a\sec(e+fx))^{9/2}}\,dx\right)$$
$$= \frac{\left(2a^2c^3\right)\text{Subst}\left(\int \frac{x^6}{\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= \frac{c^3\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^2(e+fx)}{f(a+a\sec(e+fx))^{3/2}} + \frac{c^3\,\text{Subst}\left(\int \frac{x^2\left(6+4ax^2\right)}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx, x, -\right.}{f}$$
$$= -\frac{4c^3\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} + \frac{c^3\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^2(e+fx)}{f(a+a\sec(e+fx))^{3/2}} - \frac{c^3\,\text{Sul}}{}$$
$$= -\frac{4c^3\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} + \frac{c^3\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^2(e+fx)}{f(a+a\sec(e+fx))^{3/2}} - \frac{\left(2c^3\right)}{}$$
$$= \frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} + \frac{2\sqrt{2}\,c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} - \frac{4c^3\tan(e+f}{af\sqrt{a+a\sec(e}}$$

Mathematica [A] time = 1.77, size = 132, normalized size = 0.78

$$\frac{2c^3\tan\left(\frac{1}{2}(e+fx)\right)\left(-\sec(e+fx)+\cot^2\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)-1}\,\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)+\sqrt{2}\cot^2\left(\right.\right.}{af\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*c^3*(-3 + ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cot[(e + f*x)/2]^2*Sqrt[-1 + S
ec[e + f*x]] + Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Cot[(e + f*x
```

)/2]^2*Sqrt[-1 + Sec[e + f*x]] - Sec[e + f*x])*Tan[(e + f*x)/2])/(a*f*Sqrt[
a*(1 + Sec[e + f*x])])

fricas [A] time = 1.02, size = 550, normalized size = 3.25

$$\left[\frac{\sqrt{2}\left(ac^3\cos\left(fx+e\right)^2+2\,ac^3\cos\left(fx+e\right)+ac^3\right)\sqrt{-\frac{1}{a}}\log\left(-\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{-\frac{1}{a}}\cos(fx+e)\sin(fx+e)-3\cos(fx+e)^2-2}{\cos(fx+e)^2+2\cos(fx+e)+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(2)*(a*c^3*cos(f*x + e)^2 + 2*a*c^3*cos(f*x + e) + a*c^3)*sqrt(-1/a)*
log(-(2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x
+ e)*sin(f*x + e) - 3*cos(f*x + e)^2 - 2*cos(f*x + e) + 1)/(cos(f*x + e)^2
+ 2*cos(f*x + e) + 1)) - (c^3*cos(f*x + e)^2 + 2*c^3*cos(f*x + e) + c^3)*sq
rt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f
*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)
) - 2*(3*c^3*cos(f*x + e) + c^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*si
n(f*x + e))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f), -2*((c^3
*cos(f*x + e)^2 + 2*c^3*cos(f*x + e) + c^3)*sqrt(a)*arctan(sqrt((a*cos(f*x
+ e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (3*c^3*cos(f
*x + e) + c^3)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) + sqrt(
2)*(a*c^3*cos(f*x + e)^2 + 2*a*c^3*cos(f*x + e) + a*c^3)*arctan(sqrt(2)*sqr
t((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/s
qrt(a))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f)]
```

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((c-c*sec(f*x+e))^3/(a+a*sec(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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t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
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```

```
)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant si
gn by intervals (correct if the argument is real):Check [abs(cos(f*t_nostep
+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
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)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)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)Warning, integration of abs or sign assu
mes constant sign by intervals (correct if the argument is real):Check [abs
(t_nostep^2-1)]Evaluation time: 1.75index.cc index_m i_lex_is_greater Error
: Bad Argument Value
```

maple [B] time = 1.99, size = 377, normalized size = 2.23

$$-\frac{c^3\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(-\sin\left(fx+e\right)\left(\cos^2\left(fx+e\right)\right)\sqrt{2}\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\ \text{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\ \sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)+2\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] -c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-sin(f*x+e)*cos(f*x+e)^2*2^(1/2
)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+2*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/s
in(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)+6*cos(f*x+e)^3-2*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1
)/sin(f*x+e))-10*cos(f*x+e)^2+2*cos(f*x+e)+2)/sin(f*x+e)^3/a^2
```

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

$$-\int \frac{\left(c\sec\left(fx+e\right)-c\right)^3}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((c*sec(f*x + e) - c)^3/(a*sec(f*x + e) + a)^(3/2), x)
```

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

$$\int \frac{\left(c-\frac{c}{\cos(e+f\,x)}\right)^3}{\left(a+\frac{a}{\cos(e+f\,x)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$-c^3\left(\int \frac{3\sec\left(e+fx\right)}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a\sqrt{a\sec\left(e+fx\right)+a}}\,dx+\int\left(-\frac{3\sec^2\left(e+f\right.}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**3/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] -c**3*(Integral(3*sec(e + f*x)/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a
*sqrt(a*sec(e + f*x) + a)), x) + Integral(-3*sec(e + f*x)**2/(a*sqrt(a*sec(
e + f*x) + a)*sec(e + f*x) + a*sqrt(a*sec(e + f*x) + a)), x) + Integral(sec
(e + f*x)**3/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a*sqrt(a*sec(e + f*
x) + a)), x) + Integral(-1/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a*sqr
t(a*sec(e + f*x) + a)), x))
```

3.74 $\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=119

$$\frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{\sqrt{2}\,c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{2c^2\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}}$$

```
[Out] 2*c^2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/f-c^2*arcta
n(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/a^(3/2)/f-
2*c^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.19, antiderivative size = 134, normalized size of antiderivative = 1.13, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 470, 12, 391, 203}

$$\frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{\sqrt{2}\,c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{c^2\sin(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}{af\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*f)
 - (Sqrt[2]*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f
*x]])])/(a^(3/2)*f) - (c^2*Sec[(e + f*x)/2]^2*Sin[e + f*x])/(a*f*Sqrt[a + a
*Sec[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 391

```
Int[1/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(n_))), x_Symbol] :> Dis
t[b/(b*c - a*d), Int[1/(a + b*x^n), x], x] - Dist[d/(b*c - a*d), Int[1/(c +
 d*x^n), x], x] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0]
```

Rule 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^{3/2}}\,dx = \left(a^2c^2\right)\int \frac{\tan^4(e+fx)}{(a+a\sec(e+fx))^{7/2}}\,dx$$

$$= -\frac{\left(2ac^2\right)\text{Subst}\left(\int \frac{x^4}{\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= -\frac{c^2\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{af\sqrt{a+a\sec(e+fx)}} - \frac{c^2\,\text{Subst}\left(\int \frac{2}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{af}$$

$$= -\frac{c^2\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{af\sqrt{a+a\sec(e+fx)}} - \frac{\left(2c^2\right)\text{Subst}\left(\int \frac{1}{\left(1+ax^2\right)\left(2+ax^2\right)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+f}}\right.}{af}$$

$$= -\frac{c^2\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{af\sqrt{a+a\sec(e+fx)}} - \frac{\left(2c^2\right)\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{af} + \cdots$$

$$= \frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} - \frac{\sqrt{2}\,c^2\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{2}\,\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} - \frac{c^2\sec^2\left(\frac{1}{2}(e+fx)\right)\sin}{af\sqrt{a+a\sec(e}}$$

Mathematica [A] time = 1.11, size = 128, normalized size = 1.08

$$\frac{c^2\cot\left(\frac{1}{2}(e+fx)\right)\left(\sec^2\left(\frac{1}{2}(e+fx)\right)\left(\cos(e+fx)+(\cos(e+fx)+1)\sqrt{\sec(e+fx)-1}\,\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)\right.\right.}{af\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (c^2*Cot[(e + f*x)/2]*(Sec[(e + f*x)/2]^2*(-1 + Cos[e + f*x] + ArcTan[Sqrt[
-1 + Sec[e + f*x]]]*(1 + Cos[e + f*x])*Sqrt[-1 + Sec[e + f*x]]) - Sqrt[2]*A
rcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Sqrt[-1 + Sec[e + f*x]]))/(a*f*Sqrt[
a*(1 + Sec[e + f*x])])
```

fricas [B] time = 0.93, size = 542, normalized size = 4.55

$$-\frac{4\,c^{2}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)-\sqrt{2}\left(ac^{2}\cos\left(fx+e\right)^{2}+2\,ac^{2}\cos\left(fx+e\right)+ac^{2}\right)\sqrt{-\frac{1}{a}}\log\left(2 \cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(4*c^2*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x +
 e) - sqrt(2)*(a*c^2*cos(f*x + e)^2 + 2*a*c^2*cos(f*x + e) + a*c^2)*sqrt(-1
/a)*log((2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f
*x + e)*sin(f*x + e) + 3*cos(f*x + e)^2 + 2*cos(f*x + e) - 1)/(cos(f*x + e)
^2 + 2*cos(f*x + e) + 1)) + 2*(c^2*cos(f*x + e)^2 + 2*c^2*cos(f*x + e) + c^
2)*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e)
 + 1)))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f), -(2*c^2*sqrt
((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + 2*(c^2*cos(
f*x + e)^2 + 2*c^2*cos(f*x + e) + c^2)*sqrt(a)*arctan(sqrt((a*cos(f*x + e)
+ a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - sqrt(2)*(a*c^2*co
s(f*x + e)^2 + 2*a*c^2*cos(f*x + e) + a*c^2)*arctan(sqrt(2)*sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/sqrt(a))/(a^2
*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f)]
```

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((c-c*sec(f*x+e))^2/(a+a*sec(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)
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
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/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
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```
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
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(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
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o check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*
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4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)U
nable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check si
gn: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_noste
p/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nos
tep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to c
heck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/
t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*p
i/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unab
le to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
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)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep
/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to chec
k sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_n
ostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t
_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable
to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4
*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(
-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check s
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x/2)Warning, integration of abs or sign assumes constant sign by intervals
(correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time:
```

```
1.44index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.76, size = 369, normalized size = 3.10

$$-\frac{c^{2}\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{2}\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+\sqrt{2}\sin\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] -c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)*sin(f*x+e)*2^(1/2)*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)+cos(f*x+e)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1
)/sin(f*x+e))+sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-2*cos(f*x+
e)^2+2*cos(f*x+e))/(1+cos(f*x+e))/sin(f*x+e)/a^2
```

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

$$\int \frac{\left(c\sec\left(fx+e\right)-c\right)^{2}}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*sec(f*x + e) - c)^2/(a*sec(f*x + e) + a)^(3/2), x)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{2}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$c^{2}\left(\int\left(-\frac{2\sec\left(e+fx\right)}{a\sqrt{a\sec\left(e+fx\right)+a}\sec\left(e+fx\right)+a\sqrt{a\sec\left(e+fx\right)+a}}\right)dx+\int\frac{\sec^{2}\left(e+fx\right)}{a\sqrt{a\sec\left(e+fx\right)+a}\sec\left(e+fx\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**2/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] c**2*(Integral(-2*sec(e + f*x)/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a
*sqrt(a*sec(e + f*x) + a)), x) + Integral(sec(e + f*x)**2/(a*sqrt(a*sec(e +
 f*x) + a)*sec(e + f*x) + a*sqrt(a*sec(e + f*x) + a)), x) + Integral(1/(a*s
qrt(a*sec(e + f*x) + a)*sec(e + f*x) + a*sqrt(a*sec(e + f*x) + a)), x))
```

3.75 $\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=113

$$\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{3c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{2}a^{3/2}f}-\frac{c\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/f-3/2*c*arcta
n(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/f*2^(1/2)-
c*tan(f*x+e)/f/(a+a*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.17, antiderivative size = 130, normalized size of antiderivative = 1.15, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {3904, 3887, 471, 522, 203}

$$\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{3c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{2}a^{3/2}f}-\frac{c\sin(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}{2af\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*f) -
 (3*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])])/(S
qrt[2]*a^(3/2)*f) - (c*Sec[(e + f*x)/2]^2*Sin[e + f*x])/(2*a*f*Sqrt[a + a*S
ec[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 471

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(e^(n - 1)*(e*x)^(m - n + 1)*(a + b*x^n)^(p + 1)
*(c + d*x^n)^(q + 1))/(n*(b*c - a*d)*(p + 1)), x] - Dist[e^n/(n*(b*c - a*d)
*(p + 1)), Int[(e*x)^(m - n)*(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*(m -
n + 1) + d*(m + n*(p + q + 1) + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e,
 q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[p, -1] && GeQ[n, m - n +
1] && GtQ[m - n + 1, 0] && IntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx = -\left((ac)\int \frac{\tan^2(e+fx)}{(a+a\sec(e+fx))^{5/2}}\,dx\right)$$
$$= \frac{(2c)\,\text{Subst}\left(\int \frac{x^2}{(1+ax^2)(2+ax^2)^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$
$$= -\frac{c\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{2af\sqrt{a+a\sec(e+fx)}} - \frac{c\,\text{Subst}\left(\int \frac{1-ax^2}{(1+ax^2)(2+ax^2)}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{af}$$
$$= -\frac{c\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{2af\sqrt{a+a\sec(e+fx)}} - \frac{(2c)\,\text{Subst}\left(\int \frac{1}{1+ax^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{af} + \frac{(3c\ldots}{\ldots}$$
$$= \frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} - \frac{3c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{2}\,a^{3/2}f} - \frac{c\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+\ldots}{2af\sqrt{a+a\sec(e+fx\ldots}}$$

Mathematica [A] time = 1.00, size = 130, normalized size = 1.15

$$\frac{c\cot\left(\frac{1}{2}(e+fx)\right)\left(\sec^2\left(\frac{1}{2}(e+fx)\right)\left(\cos(e+fx)+2(\cos(e+fx)+1)\sqrt{\sec(e+fx)-1}\,\tan^{-1}\left(\sqrt{\sec(e+fx)-1}\right)\ldots\right.\right.}{2af\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (c*Cot[(e + f*x)/2]*(Sec[(e + f*x)/2]^2*(-1 + Cos[e + f*x] + 2*ArcTan[Sqrt[
-1 + Sec[e + f*x]]]*(1 + Cos[e + f*x])*Sqrt[-1 + Sec[e + f*x]]) - 3*Sqrt[2]
*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Sqrt[-1 + Sec[e + f*x]]))/(2*a*f*S
qrt[a*(1 + Sec[e + f*x])])
```

fricas [B] time = 0.67, size = 505, normalized size = 4.47

$$\left[-\frac{4c\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)+3\sqrt{2}\left(c\cos(fx+e)^2+2c\cos(fx+e)+c\right)\sqrt{-a}\log\left(-\frac{2\sqrt{2}\sqrt{-a}\ldots}{\ldots}\right.}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*(4*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e
) + 3*sqrt(2)*(c*cos(f*x + e)^2 + 2*c*cos(f*x + e) + c)*sqrt(-a)*log(-(2*sq
rt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x
 + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f*x + e)^2 + 2*cos(
f*x + e) + 1)) + 4*(c*cos(f*x + e)^2 + 2*c*cos(f*x + e) + c)*sqrt(-a)*log((
2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos
(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/(a^2*f*co
s(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f), -1/2*(2*c*sqrt((a*cos(f*x + e
) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 3*sqrt(2)*(c*cos(f*x + e)^
2 + 2*c*cos(f*x + e) + c)*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + 4*(c*cos(f*x + e)^2 +
2*c*cos(f*x + e) + c)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e)
)*cos(f*x + e)/(sqrt(a)*sin(f*x + e))))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos
(f*x + e) + a^2*f)]
```

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((c-c*sec(f*x+e))/(a+a*sec(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)
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
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/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
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/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nost
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>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint: run assume t
o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
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sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableUnab
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t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Discon
tinuities at zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
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able to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>
(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign by int
ervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluatio
n time: 1.23index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.87, size = 371, normalized size = 3.28

$$c\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-2\cos\left(fx+e\right)\sin\left(fx+e\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)-3\cos($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/2*c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-2*cos(f*x+e)*sin(f*x+e)*2^(1/
2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-3*cos(f*x+e)*sin(f*x+e)*(-2*co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin
(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-2*2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)-3*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(
((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))+
2*cos(f*x+e)^2-2*cos(f*x+e))/(1+cos(f*x+e))/sin(f*x+e)/a^2
```

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

$$-\int\frac{c\sec\left(fx+e\right)-c}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((c*sec(f*x + e) - c)/(a*sec(f*x + e) + a)^(3/2), x)
```

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

$$\int \frac{c - \frac{c}{\cos(e+f\,x)}}{\left(a + \frac{a}{\cos(e+f\,x)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$-c\left(\int \frac{\sec\left(e+fx\right)}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a\sqrt{a\sec\left(e+fx\right)+a}}\,dx + \int \left(-\frac{1}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+\cdots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] -c*(Integral(sec(e + f*x)/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a*sqrt
(a*sec(e + f*x) + a)), x) + Integral(-1/(a*sqrt(a*sec(e + f*x) + a)*sec(e +
 f*x) + a*sqrt(a*sec(e + f*x) + a)), x))
```

3.76 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))}\,dx$

Optimal. Leaf size=177

$$\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}cf}-\frac{7\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{4\sqrt{2}a^{3/2}cf}+\frac{\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{4a^2cf}+\frac{\cos(e+fx)\cot(e+fx)}{}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/c/f-7/8*arctan(
1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/c/f*2^(1/2)+
1/4*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/a^2/c/f+1/4*cos(f*x+e)*cot(f*x+e)*sec
(1/2*e+1/2*f*x)^2*(a+a*sec(f*x+e))^(1/2)/a^2/c/f
```

Rubi [A] time = 0.24, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 472, 583, 522, 203}

$$\frac{\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{4a^2cf}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}cf}-\frac{7\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{4\sqrt{2}a^{3/2}cf}+\frac{\cos(e+fx)\cot(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*c*f) -
 (7*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])])/(4*S
qrt[2]*a^(3/2)*c*f) + (Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(4*a^2*c*f) +
 (Cos[e + f*x]*Cot[e + f*x]*Sec[(e + f*x)/2]^2*Sqrt[a + a*Sec[e + f*x]])/(4
*a^2*c*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 472

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(b*(e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n
)^(q + 1))/(a*e*n*(b*c - a*d)*(p + 1)), x] + Dist[1/(a*n*(b*c - a*d)*(p + 1
)), Int[(e*x)^m*(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*b*(m + 1) + n*(b*c
 - a*d)*(p + 1) + d*b*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a,
b, c, d, e, m, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[p, -1] && I
ntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 583

```
Int[((g_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_
))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(e*(g*x)^(m + 1)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*c*g*(m + 1)), x] + Dist[1/(a*c*g^n*(
```

```
m + 1)), Int[(g*x)^(m + n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m + 1) -
 e*(b*c + a*d)*(m + n + 1) - e*n*(b*c*p + a*d*q) - b*e*d*(m + n*(p + q + 2)
 + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0
] && LtQ[m, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))}\,dx = -\frac{\int \frac{\cot^2(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx}{ac}$$

$$= \frac{2\,\mathrm{Subst}\left(\int \frac{1}{x^2\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^2cf}$$

$$= \frac{\cos(e+fx)\cot(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)\sqrt{a+a\sec(e+fx)}}{4a^2cf} + \cdots$$

$$= \frac{\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{4a^2cf} + \frac{\cos(e+fx)\cot(e+fx)\sec^2\left(\cdots\right.}{4a^2\cdots}$$

$$= \frac{\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{4a^2cf} + \frac{\cos(e+fx)\cot(e+fx)\sec^2\left(\cdots\right.}{4a^2\cdots}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}cf} - \frac{7\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{4\sqrt{2}\,a^{3/2}cf} + \frac{\cot(e+\cdots}{\cdots}$$

Mathematica [A] time = 1.18, size = 154, normalized size = 0.87

$$\frac{\sin^2\left(\frac{1}{2}(e+fx)\right)\tan\left(\frac{1}{2}(e+fx)\right)\left(3\cos(e+fx)-7\sqrt{2}\cos^2\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)-1}\tan^{-1}\left(\frac{\sqrt{\sec(e+fx)-1}}{\sqrt{2}}\right)+\cdots\right.}{2acf(\cos(e+fx)-1)^2\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])),x]
```

```
[Out] ((1 + 3*Cos[e + f*x] - 7*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Co
s[(e + f*x)/2]^2*Sqrt[-1 + Sec[e + f*x]] + 8*ArcTan[Sqrt[-1 + Sec[e + f*x]]
```

```
]*(1 + Cos[e + f*x])*Sqrt[-1 + Sec[e + f*x]])*Sin[(e + f*x)/2]^2*Tan[(e + f
*x)/2])/(2*a*c*f*(-1 + Cos[e + f*x])^2*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 0.63, size = 514, normalized size = 2.90

$$\left[-\frac{7\sqrt{2}\sqrt{-a}\left(\cos\left(fx+e\right)+1\right)\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)-3a\cos\left(fx+e\right)^{2}-2a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)^{2}+2\cos\left(fx+e\right)+1}\right)\sin\left(fx\cdots\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [-1/16*(7*sqrt(2)*sqrt(-a)*(cos(f*x + e) + 1)*log(-(2*sqrt(2)*sqrt(-a)*sqrt
((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(f*x
 + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1))*sin(
f*x + e) + 8*sqrt(-a)*(cos(f*x + e) + 1)*log(-(8*a*cos(f*x + e)^3 + 4*(2*co
s(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) -
4*(3*cos(f*x + e)^2 + cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
)/((a^2*c*f*cos(f*x + e) + a^2*c*f)*sin(f*x + e)), 1/8*(7*sqrt(2)*sqrt(a)*(
cos(f*x + e) + 1)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)/(sqrt(a)*sin(f*x + e)))*sin(f*x + e) + 8*sqrt(a)*(cos(f*x + e) +
 1)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*s
in(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*(3*
cos(f*x + e)^2 + cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((a
^2*c*f*cos(f*x + e) + a^2*c*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(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),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
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*pi/x/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
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able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integratio
n of abs or sign assumes constant sign by intervals (correct if the argumen
t is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t
_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi
/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unabl
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tions on a variableWarning, assuming -2*a+a is positive. Hint: run assume t
o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
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able to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Discontinuities at
zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
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/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*p
i/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Ev
aluation time: 1.06index.cc index_m i_lex_is_greater Error: Bad Argument Va
lue
```

maple [B] time = 1.90, size = 377, normalized size = 2.13

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(8\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+7\sqrt{-\frac{2\cos}{1+\cos}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] 1/8/c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(8*sin(f*x+e)*cos(f*x+e)^2*2^(1
/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(
f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+7*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)
/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)-8*2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+
e)/(1+cos(f*x+e)))^(1/2)-7*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e
))-6*cos(f*x+e)^3+4*cos(f*x+e)^2+2*cos(f*x+e))/sin(f*x+e)^3/a^2
```

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

$$-\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(c\sec\left(fx+e\right)-c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -integrate(1/((a*sec(f*x + e) + a)^(3/2)*(c*sec(f*x + e) - c)), x)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))), x)
```

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

$$-\frac{\int \frac{1}{a\sqrt{a\sec\left(e+fx\right)+a}\sec^{2}\left(e+fx\right)-a\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -Integral(1/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**2 - a*sqrt(a*sec(e +
f*x) + a)), x)/c
```

3.77 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=214

$$\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}c^2f}-\frac{9\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{8\sqrt{2}\,a^{3/2}c^2f}+\frac{\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{12a^3c^2f}-\frac{\cos(e+fx)\cot^3(e+}{}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/c^2/f+1/12*cot(
f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a^3/c^2/f-1/4*cos(f*x+e)*cot(f*x+e)^3*sec(1
/2*e+1/2*f*x)^2*(a+a*sec(f*x+e))^(3/2)/a^3/c^2/f-9/16*arctan(1/2*a^(1/2)*ta
n(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/c^2/f*2^(1/2)+7/8*cot(f*x+
e)*(a+a*sec(f*x+e))^(1/2)/a^2/c^2/f
```

Rubi [A] time = 0.28, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 472, 583, 522, 203}

$$\frac{\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{12a^3c^2f}+\frac{7\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{8a^2c^2f}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}c^2f}-\frac{9\tan^{-1}\left(\frac{\sqrt{a}}{\sqrt{2}\sqrt{a}}\right)}{8\sqrt{2}\,a^{3/}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*c^2*f)
 - (9*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])])/(8
*Sqrt[2]*a^(3/2)*c^2*f) + (7*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(8*a^2*
c^2*f) + (Cot[e + f*x]^3*(a + a*Sec[e + f*x])^(3/2))/(12*a^3*c^2*f) - (Cos[
e + f*x]*Cot[e + f*x]^3*Sec[(e + f*x)/2]^2*(a + a*Sec[e + f*x])^(3/2))/(4*a
^3*c^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 472

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(b*(e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n
)^(q + 1))/(a*e*n*(b*c - a*d)*(p + 1)), x] + Dist[1/(a*n*(b*c - a*d)*(p + 1
)), Int[(e*x)^m*(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*b*(m + 1) + n*(b*c
 - a*d)*(p + 1) + d*b*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a,
b, c, d, e, m, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[p, -1] && I
ntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 583

```
Int[((g_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_
))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(e*(g*x)^(m + 1)*(a +
```

```
b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*c*g*(m + 1)), x] + Dist[1/(a*c*g^n*(
m + 1)), Int[(g*x)^(m + n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m + 1) -
 e*(b*c + a*d)*(m + n + 1) - e*n*(b*c*p + a*d*q) - b*e*d*(m + n*(p + q + 2)
 + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0
] && LtQ[m, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^2}\,dx &= \frac{\int \cot^4(e+fx)\sqrt{a+a\sec(e+fx)}\,dx}{a^2c^2}\\
&= -\frac{2\,\mathrm{Subst}\left(\int \frac{1}{x^4\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^3c^2f}\\
&= -\frac{\cos(e+fx)\cot^3(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)(a+a\sec(e+fx))^{3/}}{4a^3c^2f}\\
&= \frac{\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{12a^3c^2f} - \frac{\cos(e+fx)\cot^3(e+fx)\,\mathrm{se}}{}\\
&= \frac{7\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{8a^2c^2f} + \frac{\cot^3(e+fx)(a+a\sec(e+}{12a^3c^2f}\\
&= \frac{7\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{8a^2c^2f} + \frac{\cot^3(e+fx)(a+a\sec(e+}{12a^3c^2f}\\
&= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}c^2f} - \frac{9\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{8\sqrt{2}\,a^{3/2}c^2f} + \frac{7\cot(e}{}
\end{aligned}
$$

Mathematica [C] time = 24.03, size = 5612, normalized size = 26.22

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] Result too large to show
```

fricas [A] time = 0.65, size = 560, normalized size = 2.62

$$\left[-\frac{27\sqrt{2}\left(\cos\left(fx+e\right)^2-1\right)\sqrt{-a}\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)-3a\cos\left(fx+e\right)^2-2a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)^2+2\cos\left(fx+e\right)+1}\right)\sin\left(f\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^2,x, algorithm="fricas"
)
```

```
[Out] [-1/96*(27*sqrt(2)*(cos(f*x + e)^2 - 1)*sqrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*s
qrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(
f*x + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1))*s
in(f*x + e) + 48*(cos(f*x + e)^2 - 1)*sqrt(-a)*log(-(8*a*cos(f*x + e)^3 + 4
*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f
*x + e))*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x +
 e) - 4*(31*cos(f*x + e)^3 - 2*cos(f*x + e)^2 - 21*cos(f*x + e))*sqrt((a*co
s(f*x + e) + a)/cos(f*x + e)))/((a^2*c^2*f*cos(f*x + e)^2 - a^2*c^2*f)*sin(
f*x + e)), 1/48*(27*sqrt(2)*(cos(f*x + e)^2 - 1)*sqrt(a)*arctan(sqrt(2)*sqr
t((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))*s
in(f*x + e) + 48*(cos(f*x + e)^2 - 1)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 +
 a*cos(f*x + e) - a))*sin(f*x + e) + 2*(31*cos(f*x + e)^3 - 2*cos(f*x + e)^
2 - 21*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((a^2*c^2*f*c
os(f*x + e)^2 - a^2*c^2*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(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^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
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/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
```

```
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
 to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (
2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>
(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
 variableUnable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable t
o check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*
pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-
4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)U
nable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check si
gn: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_noste
p/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nos
tep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to c
heck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/
t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*p
i/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unab
le to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
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)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep
/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to chec
k sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_n
ostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t
_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable
to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4
*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(
-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check s
ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nost
ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi
/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*
pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Una
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Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(t_nostep^2-1)]Evaluation time: 1.24index.cc index_m i_lex_is_grea
ter Error: Bad Argument Value
```

maple [B] time = 2.50, size = 387, normalized size = 1.81

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(48\sin\left(fx+e\right)\left(\cos^2\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+27\sqrt{-}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^2,x)
```

```
[Out] -1/48/c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(48*sin(f*x+e)*cos(f*x+e)^2
*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+27*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x
+e)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)-48*2^(1/2)*sin(f*x+e)*arctanh(1/
2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)-27*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/s
in(f*x+e))-62*cos(f*x+e)^3+4*cos(f*x+e)^2+42*cos(f*x+e))/sin(f*x+e)^5*(-1+c
os(f*x+e)^2)/a^2
```

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

$$\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(c\sec\left(fx+e\right)-c\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^2,x, algorithm="maxima"
)
```

```
[Out] integrate(1/((a*sec(f*x + e) + a)^(3/2)*(c*sec(f*x + e) - c)^2), x)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^2),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^2), x)
```

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

$$\frac{\int \frac{1}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec^3\left(e+fx\right)-a\sqrt{a\sec\left(e+fx\right)+a}\,\sec^2\left(e+fx\right)-a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**2,x)
```

```
[Out] Integral(1/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**3 - a*sqrt(a*sec(e + f
*x) + a)*sec(e + f*x)**2 - a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a*sqrt
(a*sec(e + f*x) + a)), x)/c**2
```

3.78 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^3}\,dx$

Optimal. Leaf size=249

$$\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}c^3f}-\frac{11\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{16\sqrt{2}\,a^{3/2}c^3f}-\frac{3\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{20a^4c^3f}+\frac{\cos(e+fx)\cot^5(e}{}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/c^3/f-5/24*cot(
f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a^3/c^3/f-3/20*cot(f*x+e)^5*(a+a*sec(f*x+e)
)^(5/2)/a^4/c^3/f+1/4*cos(f*x+e)*cot(f*x+e)^5*sec(1/2*e+1/2*f*x)^2*(a+a*sec
(f*x+e))^(5/2)/a^4/c^3/f-11/32*arctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*s
ec(f*x+e))^(1/2))/a^(3/2)/c^3/f*2^(1/2)+21/16*cot(f*x+e)*(a+a*sec(f*x+e))^(
1/2)/a^2/c^3/f
```

Rubi [A] time = 0.34, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 472, 583, 522, 203}

$$-\frac{3\cot^5(e+fx)(a\sec(e+fx)+a)^{5/2}}{20a^4c^3f}-\frac{5\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{24a^3c^3f}+\frac{21\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{16a^2c^3f}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^3),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*c^3*f)
 - (11*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])])/(
16*Sqrt[2]*a^(3/2)*c^3*f) + (21*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(16*
a^2*c^3*f) - (5*Cot[e + f*x]^3*(a + a*Sec[e + f*x])^(3/2))/(24*a^3*c^3*f) -
 (3*Cot[e + f*x]^5*(a + a*Sec[e + f*x])^(5/2))/(20*a^4*c^3*f) + (Cos[e + f*
x]*Cot[e + f*x]^5*Sec[(e + f*x)/2]^2*(a + a*Sec[e + f*x])^(5/2))/(4*a^4*c^3
*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 472

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(b*(e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n
)^(q + 1))/(a*e*n*(b*c - a*d)*(p + 1)), x] + Dist[1/(a*n*(b*c - a*d)*(p + 1
)), Int[(e*x)^m*(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*b*(m + 1) + n*(b*c
 - a*d)*(p + 1) + d*b*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a,
b, c, d, e, m, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[p, -1] && I
ntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 583

```
Int[((g_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_
))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(e*(g*x)^(m + 1)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*c*g*(m + 1)), x] + Dist[1/(a*c*g^n*(
m + 1)), Int[(g*x)^(m + n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m + 1) -
 e*(b*c + a*d)*(m + n + 1) - e*n*(b*c*p + a*d*q) - b*e*d*(m + n*(p + q + 2)
 + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0
] && LtQ[m, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^3}\,dx = -\frac{\int \cot^6(e+fx)(a+a\sec(e+fx))^{3/2}\,dx}{a^3c^3}$$

$$= \frac{2\,\text{Subst}\left(\int \frac{1}{x^6\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^4c^3f}$$

$$= \frac{\cos(e+fx)\cot^5(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)(a+a\sec(e+fx))^{5/2}}{4a^4c^3f}$$

$$= -\frac{3\cot^5(e+fx)(a+a\sec(e+fx))^{5/2}}{20a^4c^3f} + \frac{\cos(e+fx)\cot^5(e+fx}{}$$

$$= -\frac{5\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{24a^3c^3f} - \frac{3\cot^5(e+fx)(a+a\sec}{20a^4c^3f}$$

$$= \frac{21\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{16a^2c^3f} - \frac{5\cot^3(e+fx)(a+a\sec(e}{24a^3c^3f}$$

$$= \frac{21\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{16a^2c^3f} - \frac{5\cot^3(e+fx)(a+a\sec(e}{24a^3c^3f}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}c^3f} - \frac{11\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{16\sqrt{2}\,a^{3/2}c^3f} + \frac{21\cot(}{}$$

Mathematica [C] time = 23.98, size = 5629, normalized size = 22.61

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^3),x]
```

```
[Out] Result too large to show
```

fricas [A] time = 0.69, size = 714, normalized size = 2.87

$$\left[-\frac{165\sqrt{2}\left(\cos\left(fx+e\right)^{3}-\cos\left(fx+e\right)^{2}-\cos\left(fx+e\right)+1\right)\sqrt{-a}\,\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)-}{\cos\left(fx+e\right)^{2}+2\cos\left(fx\right.}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^3,x, algorithm="fricas"
)
```

```
[Out] [-1/960*(165*sqrt(2)*(cos(f*x + e)^3 - cos(f*x + e)^2 - cos(f*x + e) + 1)*s
qrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f
*x + e)^2 + 2*cos(f*x + e) + 1))*sin(f*x + e) + 480*(cos(f*x + e)^3 - cos(f
*x + e)^2 - cos(f*x + e) + 1)*sqrt(-a)*log(-(8*a*cos(f*x + e)^3 + 4*(2*cos(
f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) - 4*
(449*cos(f*x + e)^4 - 351*cos(f*x + e)^3 - 365*cos(f*x + e)^2 + 315*cos(f*x
 + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((a^2*c^3*f*cos(f*x + e)^3
- a^2*c^3*f*cos(f*x + e)^2 - a^2*c^3*f*cos(f*x + e) + a^2*c^3*f)*sin(f*x +
e)), 1/480*(165*sqrt(2)*(cos(f*x + e)^3 - cos(f*x + e)^2 - cos(f*x + e) + 1
)*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)/(sqrt(a)*sin(f*x + e)))*sin(f*x + e) + 480*(cos(f*x + e)^3 - cos(f*x + e
)^2 - cos(f*x + e) + 1)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e
) - a))*sin(f*x + e) + 2*(449*cos(f*x + e)^4 - 351*cos(f*x + e)^3 - 365*cos
(f*x + e)^2 + 315*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((
a^2*c^3*f*cos(f*x + e)^3 - a^2*c^3*f*cos(f*x + e)^2 - a^2*c^3*f*cos(f*x + e
) + a^2*c^3*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(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^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)
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
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/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
```

```
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
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sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
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o check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*
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ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
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step/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (4*pi/t_nos
tep/2)>(-4*pi/t_nostep/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)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation ti
me: 1.41index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 2.51, size = 725, normalized size = 2.91

$$\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(-1+\cos\left(fx+e\right)\right)\left(1+\cos\left(fx+e\right)\right)^{2}\left(480\left(\cos^{3}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \mathrm{arc}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^3,x)
```

```
[Out] 1/480/c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))*(1+cos(f*x+
e))^2*(480*cos(f*x+e)^3*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)
*2^(1/2))-480*sin(f*x+e)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x
+e)*2^(1/2))+165*sin(f*x+e)*cos(f*x+e)^3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*
x+e))-480*cos(f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^
(1/2))-165*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+
480*2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin
(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)-165*cos(f*
x+e)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+
cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-898*cos(f*x+e)^4+16
5*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))+702*cos(f*x+e)^3+730*c
os(f*x+e)^2-630*cos(f*x+e))/sin(f*x+e)^7/a^2
```

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

$$-\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(c\sec\left(fx+e\right)-c\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^3,x, algorithm="maxima"
)
```

```
[Out] -integrate(1/((a*sec(f*x + e) + a)^(3/2)*(c*sec(f*x + e) - c)^3), x)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^3),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^3), x)
```

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

$$-\frac{\int \frac{1}{a\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{4}\left(e+fx\right)-2a\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{3}\left(e+fx\right)+2a\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)-a\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**3,x)
```

```
[Out] -Integral(1/(a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**4 - 2*a*sqrt(a*sec(e
+ f*x) + a)*sec(e + f*x)**3 + 2*a*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) - a
*sqrt(a*sec(e + f*x) + a)), x)/c**3
```

3.79 $\int \frac{(c-c\sec(e+fx))^5}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=260

$$\frac{2c^5\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{23\sqrt{2}\,c^5\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\,\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}+\frac{21c^5\tan(e+fx)}{a^2f\sqrt{a\sec(e+fx)+a}}-\frac{19c^5\tan^3(e+fx)}{6af(a\sec(e+fx)+a)^{3/2}}$$

```
[Out] 2*c^5*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f-23*c^5*ar
ctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/a^(5/2)
/f+21*c^5*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)-19/6*c^5*tan(f*x+e)^3/a/f
/(a+a*sec(f*x+e))^(3/2)+3/4*c^5*sec(1/2*e+1/2*f*x)^2*sin(f*x+e)*tan(f*x+e)^
4/f/(a+a*sec(f*x+e))^(5/2)+1/4*a*c^5*sec(1/2*e+1/2*f*x)^4*sin(f*x+e)^2*tan(
f*x+e)^5/f/(a+a*sec(f*x+e))^(7/2)
```

Rubi [A] time = 0.34, antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3904, 3887, 470, 578, 582, 522, 203}

$$\frac{2c^5\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{23\sqrt{2}\,c^5\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\,\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}+\frac{21c^5\tan(e+fx)}{a^2f\sqrt{a\sec(e+fx)+a}}-\frac{19c^5\tan^3(e+fx)}{6af(a\sec(e+fx)+a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^5/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*c^5*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*f)
 - (23*Sqrt[2]*c^5*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e
+ f*x]])])/(a^(5/2)*f) + (21*c^5*Tan[e + f*x])/(a^2*f*Sqrt[a + a*Sec[e + f*
x]]) - (19*c^5*Tan[e + f*x]^3)/(6*a*f*(a + a*Sec[e + f*x])^(3/2)) + (3*c^5*
Sec[(e + f*x)/2]^2*Sin[e + f*x]*Tan[e + f*x]^4)/(4*f*(a + a*Sec[e + f*x])^(
5/2)) + (a*c^5*Sec[(e + f*x)/2]^4*Sin[e + f*x]^2*Tan[e + f*x]^5)/(4*f*(a +
a*Sec[e + f*x])^(7/2))
```

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 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 578

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(g^(n - 1)*(b*e - a*f)*
(g*x)^(m - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)
*(p + 1)), x] - Dist[g^n/(b*n*(b*c - a*d)*(p + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*(b*e - a*f)*(m - n + 1) + (d*(b*e - a*f
)*(m + n*q + 1) - b*n*(c*f - d*e)*(p + 1))*x^n, x], x], x] /; FreeQ[{a, b,
c, d, e, f, g, q}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m - n + 1, 0]
```

Rule 582

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*g^(n - 1)*(g*x)^(m
 - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q + 1)
+ 1)), x] - Dist[g^n/(b*d*(m + n*(p + q + 1) + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m - n + 1) + (a*f*d*(m + n*q + 1) + b*(f
*c*(m + n*p + 1) - e*d*(m + n*(p + q + 1) + 1)))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0] && GtQ[m, n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^5}{(a+a\sec(e+fx))^{5/2}}\,dx = -\left(\left(a^5c^5\right)\int \frac{\tan^{10}(e+fx)}{(a+a\sec(e+fx))^{15/2}}\,dx\right)$$

$$= \frac{\left(2a^3c^5\right)\mathrm{Subst}\left(\int \frac{x^{10}}{(1+ax^2)(2+ax^2)^3}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= \frac{ac^5\sec^4\left(\frac{1}{2}(e+fx)\right)\sin^2(e+fx)\tan^5(e+fx)}{4f(a+a\sec(e+fx))^{7/2}} + \frac{\left(ac^5\right)\mathrm{Subst}\left(\int \frac{x^6(14+10ax^2)}{(1+ax^2)(2+ax^2)^2}\,dx,\right.}{2f}$$

$$= \frac{3c^5\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^4(e+fx)}{4f(a+a\sec(e+fx))^{5/2}} + \frac{ac^5\sec^4\left(\frac{1}{2}(e+fx)\right)\sin^2(e+fx)\,\mathrm{t}}{4f(a+a\sec(e+fx))^{7/}}$$

$$= -\frac{19c^5\tan^3(e+fx)}{6af(a+a\sec(e+fx))^{3/2}} + \frac{3c^5\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^4(e+fx)}{4f(a+a\sec(e+fx))^{5/2}} + \frac{ac^5\,\mathrm{s}}{}$$

$$= \frac{21c^5\tan(e+fx)}{a^2f\sqrt{a+a\sec(e+fx)}} - \frac{19c^5\tan^3(e+fx)}{6af(a+a\sec(e+fx))^{3/2}} + \frac{3c^5\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+}{4f(a+a\sec(e+}$$

$$= \frac{21c^5\tan(e+fx)}{a^2f\sqrt{a+a\sec(e+fx)}} - \frac{19c^5\tan^3(e+fx)}{6af(a+a\sec(e+fx))^{3/2}} + \frac{3c^5\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+}{4f(a+a\sec(e+}$$

$$= \frac{2c^5\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}f} - \frac{23\sqrt{2}\,c^5\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}f} + \frac{21c^5\tan(e+f}{a^2f\sqrt{a+a\sec(e+}}$$

Mathematica [A] time = 3.64, size = 180, normalized size = 0.69

$$\frac{c^5\cot\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\left((-30\cos(e+fx)+52\cos(2(e+fx))-66\cos(3(e+fx))-37\cos(4(e+fx))+8\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^5/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (c^5*Cot[(e + f*x)/2]*((81 - 30*Cos[e + f*x] + 52*Cos[2*(e + f*x)] - 66*Cos
[3*(e + f*x)] - 37*Cos[4*(e + f*x)])*Sec[(e + f*x)/2]^4 + 96*ArcTan[Sqrt[-1
 + Sec[e + f*x]]]*Cos[e + f*x]^2*Sqrt[-1 + Sec[e + f*x]] - 1104*Sqrt[2]*Arc
Tan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Cos[e + f*x]^2*Sqrt[-1 + Sec[e + f*x]]
)*Sec[e + f*x]^2)/(48*a^2*f*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 2.96, size = 742, normalized size = 2.85

$$\left[\frac{69\sqrt{2}\left(ac^5\cos\left(fx+e\right)^4+3\,ac^5\cos\left(fx+e\right)^3+3\,ac^5\cos\left(fx+e\right)^2+ac^5\cos\left(fx+e\right)\right)\sqrt{-\frac{1}{a}}\log\left(\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)}{\cos(fx+e}}}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(69*sqrt(2)*(a*c^5*cos(f*x + e)^4 + 3*a*c^5*cos(f*x + e)^3 + 3*a*c^5*c
os(f*x + e)^2 + a*c^5*cos(f*x + e))*sqrt(-1/a)*log((2*sqrt(2)*sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) + 3*cos(f*x
 + e)^2 + 2*cos(f*x + e) - 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) - 6*(c
^5*cos(f*x + e)^4 + 3*c^5*cos(f*x + e)^3 + 3*c^5*cos(f*x + e)^2 + c^5*cos(f
*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e)
 + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*
x + e) + 1)) + 4*(37*c^5*cos(f*x + e)^3 + 70*c^5*cos(f*x + e)^2 + 20*c^5*co
s(f*x + e) - c^5)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^
3*f*cos(f*x + e)^4 + 3*a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + a^3*
f*cos(f*x + e)), -1/3*(6*(c^5*cos(f*x + e)^4 + 3*c^5*cos(f*x + e)^3 + 3*c^5
*cos(f*x + e)^2 + c^5*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a
)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 2*(37*c^5*cos(f*x +
e)^3 + 70*c^5*cos(f*x + e)^2 + 20*c^5*cos(f*x + e) - c^5)*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*sin(f*x + e) - 69*sqrt(2)*(a*c^5*cos(f*x + e)^4 + 3*
a*c^5*cos(f*x + e)^3 + 3*a*c^5*cos(f*x + e)^2 + a*c^5*cos(f*x + e))*arctan(
sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f
*x + e)))/sqrt(a))/(a^3*f*cos(f*x + e)^4 + 3*a^3*f*cos(f*x + e)^3 + 3*a^3*f
*cos(f*x + e)^2 + a^3*f*cos(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((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^(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
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
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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/t_nostep/2)>(-2*pi/t_nostep/2)Unable
 to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (
2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>
(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integra
tion of abs or sign assumes constant sign by intervals (correct if the argu
ment is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sig
n: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep
/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nost
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/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unabl
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```
e to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
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2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check
 sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_no
step/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
nostep/2)Warning, assuming -2*a+a is positive. Hint: run assume to make ass
umptions on a variableWarning, assuming -2*a+a is positive. Hint: run assum
e to make assumptions on a variableWarning, assuming -2*a+a is positive. Hi
nt: run assume to make assumptions on a variableWarning, assuming -2*a+a is
 positive. Hint: run assume to make assumptions on a variableUnable to chec
k sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_n
ostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t
_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable
to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4
*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(
-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
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ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nost
ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi
/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*
pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Una
ble to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign
: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/
2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_noste
p/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to che
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nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/
t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable
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4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>
(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2
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sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nos
tep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_n
ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4
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check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assum
es constant sign by intervals (correct if the argument is real):Check [abs(
t_nostep^2-1)]Evaluation time: 3.46index.cc index_m i_lex_is_greater Error:
 Bad Argument Value
```

maple [B] time = 2.55, size = 726, normalized size = 2.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/6*c^5/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))^2*(-3*cos(f*
x+e)^3*sin(f*x+e)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)-69*cos(
f*x+e)^3*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(((-2*cos(f*x+e)
/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-9*arctanh(1/2*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(3/2)*sin(f*x+e)*cos(f*x+e)^2*2^(1/2)-207*cos(f*x+e)
^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^
(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*sin(f*x+e)-9*sin(f*x+e)*cos(f*x+
e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2
^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*2^(1/2)-207*sin(f*x+e)*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(
f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)-3*2^(1/2)*arctanh(1/2*(-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(3/2)*sin(f*x+e)-69*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*
sin(f*x+e)+148*cos(f*x+e)^4+132*cos(f*x+e)^3-200*cos(f*x+e)^2-84*cos(f*x+e)
+4)/cos(f*x+e)/sin(f*x+e)^5/a^3
```

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((c-c*sec(f*x+e))^5/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^5}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^5/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^5/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$-c^5\left(\int \frac{5\sec\left(e+fx\right)}{a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec^2\left(e+fx\right)+2a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a^2\sqrt{a\sec\left(e+fx\right)+a}}\,d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**5/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] -c**5*(Integral(5*sec(e + f*x)/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)*
*2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f*x
) + a)), x) + Integral(-10*sec(e + f*x)**2/(a**2*sqrt(a*sec(e + f*x) + a)*s
ec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a
*sec(e + f*x) + a)), x) + Integral(10*sec(e + f*x)**3/(a**2*sqrt(a*sec(e +
f*x) + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) +
a**2*sqrt(a*sec(e + f*x) + a)), x) + Integral(-5*sec(e + f*x)**4/(a**2*sqrt
(a*sec(e + f*x) + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(
e + f*x) + a**2*sqrt(a*sec(e + f*x) + a)), x) + Integral(sec(e + f*x)**5/(a
**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) +
 a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f*x) + a)), x) + Integral(-1/(a**2*s
qrt(a*sec(e + f*x) + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*s
ec(e + f*x) + a**2*sqrt(a*sec(e + f*x) + a)), x))
```

3.80 $\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=229

$$\frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{11c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{2}\,a^{5/2}f}+\frac{7c^4\tan(e+fx)}{2a^2f\sqrt{a\sec(e+fx)+a}}-\frac{c^4\sin^2(e+fx)\tan^3(e+fx)}{4f(a\sec(e+fx)+}$$

```
[Out] 2*c^4*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f-11/2*c^4*
arctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f*2^(
1/2)+7/2*c^4*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)-1/4*c^4*sec(1/2*e+1/2*
f*x)^2*sin(f*x+e)*tan(f*x+e)^2/a/f/(a+a*sec(f*x+e))^(3/2)-1/4*c^4*sec(1/2*e
+1/2*f*x)^4*sin(f*x+e)^2*tan(f*x+e)^3/f/(a+a*sec(f*x+e))^(5/2)
```

Rubi [A] time = 0.30, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3904, 3887, 470, 578, 582, 522, 203}

$$\frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{11c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{2}\,a^{5/2}f}+\frac{7c^4\tan(e+fx)}{2a^2f\sqrt{a\sec(e+fx)+a}}-\frac{c^4\sin^2(e+fx)\tan^3(e+fx)}{4f(a\sec(e+fx)+}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*c^4*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*f)
 - (11*c^4*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])
])/(Sqrt[2]*a^(5/2)*f) + (7*c^4*Tan[e + f*x])/(2*a^2*f*Sqrt[a + a*Sec[e + f
*x]]) - (c^4*Sec[(e + f*x)/2]^2*Sin[e + f*x]*Tan[e + f*x]^2)/(4*a*f*(a + a*
Sec[e + f*x])^(3/2)) - (c^4*Sec[(e + f*x)/2]^4*Sin[e + f*x]^2*Tan[e + f*x]^
3)/(4*f*(a + a*Sec[e + f*x])^(5/2))
```

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 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 578

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(g^(n - 1)*(b*e - a*f)*
(g*x)^(m - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)
*(p + 1)), x] - Dist[g^n/(b*n*(b*c - a*d)*(p + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*(b*e - a*f)*(m - n + 1) + (d*(b*e - a*f
)*(m + n*q + 1) - b*n*(c*f - d*e)*(p + 1))*x^n, x], x], x] /; FreeQ[{a, b,
c, d, e, f, g, q}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m - n + 1, 0]
```

Rule 582

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*g^(n - 1)*(g*x)^(m
 - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*d*(m + n*(p + q + 1)
+ 1)), x] - Dist[g^n/(b*d*(m + n*(p + q + 1) + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m - n + 1) + (a*f*d*(m + n*q + 1) + b*(f
*c*(m + n*p + 1) - e*d*(m + n*(p + q + 1) + 1)))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0] && GtQ[m, n - 1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^4}{(a+a\sec(e+fx))^{5/2}}\,dx = \left(a^4c^4\right)\int \frac{\tan^8(e+fx)}{(a+a\sec(e+fx))^{13/2}}\,dx$$

$$= -\frac{\left(2a^2c^4\right)\text{Subst}\left(\int \frac{x^8}{(1+ax^2)(2+ax^2)^3}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= -\frac{c^4\sec^4\left(\frac{1}{2}(e+fx)\right)\sin^2(e+fx)\tan^3(e+fx)}{4f(a+a\sec(e+fx))^{5/2}} - \frac{c^4\,\text{Subst}\left(\int \frac{x^4(10+6ax^2)}{(1+ax^2)(2+ax^2)^2}\,dx, x, -\right.}{2f}$$

$$= -\frac{c^4\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^2(e+fx)}{4af(a+a\sec(e+fx))^{3/2}} - \frac{c^4\sec^4\left(\frac{1}{2}(e+fx)\right)\sin^2(e+fx)\,\text{ta}}{4f(a+a\sec(e+fx))^{5/2}}$$

$$= \frac{7c^4\tan(e+fx)}{2a^2f\sqrt{a+a\sec(e+fx)}} - \frac{c^4\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^2(e+fx)}{4af(a+a\sec(e+fx))^{3/2}} - \frac{c^4\sec^4\left(\right.}{}$$

$$= \frac{7c^4\tan(e+fx)}{2a^2f\sqrt{a+a\sec(e+fx)}} - \frac{c^4\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)\tan^2(e+fx)}{4af(a+a\sec(e+fx))^{3/2}} - \frac{c^4\sec^4\left(\right.}{}$$

$$= \frac{2c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}f} - \frac{11c^4\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{2}\,a^{5/2}f} + \frac{7c^4\tan(e+fx)}{2a^2f\sqrt{a+a\sec(e+f}}$$

Mathematica [A] time = 2.68, size = 164, normalized size = 0.72

$$\frac{c^4\cot\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\left((19\cos(e+fx)-12\cos(2(e+fx))-3\cos(3(e+fx))-4)\sec^4\left(\frac{1}{2}(e+fx)\right)+32\right.}{16a^2f\sqrt{a(\text{se}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^4/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (c^4*Cot[(e + f*x)/2]*((-4 + 19*Cos[e + f*x] - 12*Cos[2*(e + f*x)] - 3*Cos[
3*(e + f*x)])*Sec[(e + f*x)/2]^4 + 32*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Cos[e
 + f*x]*Sqrt[-1 + Sec[e + f*x]] - 88*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]
/Sqrt[2]]*Cos[e + f*x]*Sqrt[-1 + Sec[e + f*x]])*Sec[e + f*x])/(16*a^2*f*Sqr
t[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 2.48, size = 655, normalized size = 2.86

$$\left[-\frac{11\sqrt{2}\left(c^4\cos\left(fx+e\right)^3+3c^4\cos\left(fx+e\right)^2+3c^4\cos\left(fx+e\right)+c^4\right)\sqrt{-a}\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\,\text{si}}{\cos(fx+e)^2+}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/4*(11*sqrt(2)*(c^4*cos(f*x + e)^3 + 3*c^4*cos(f*x + e)^2 + 3*c^4*cos(f*
x + e) + c^4)*sqrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/c
```

```
os(f*x + e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x +
 e) + a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 4*(c^4*cos(f*x + e)^3 + 3
*c^4*cos(f*x + e)^2 + 3*c^4*cos(f*x + e) + c^4)*sqrt(-a)*log((2*a*cos(f*x +
 e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 4*(3*c^4*cos(f*x + e)
^2 + 9*c^4*cos(f*x + e) + 2*c^4)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*si
n(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*
x + e) + a^3*f), 1/2*(11*sqrt(2)*(c^4*cos(f*x + e)^3 + 3*c^4*cos(f*x + e)^2
 + 3*c^4*cos(f*x + e) + c^4)*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) +
a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 4*(c^4*cos(f*x + e)
^3 + 3*c^4*cos(f*x + e)^2 + 3*c^4*cos(f*x + e) + c^4)*sqrt(a)*arctan(sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + 2*
(3*c^4*cos(f*x + e)^2 + 9*c^4*cos(f*x + e) + 2*c^4)*sqrt((a*cos(f*x + e) +
a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)
^2 + 3*a^3*f*cos(f*x + e) + a^3*f)]
```

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((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(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
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eck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs o
r sign assumes constant sign by intervals (correct if the argument is real)
:Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)
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/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unabl
e to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
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tep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to c
heck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/
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/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
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ble to check sign: (4*pi/x/2)>(-4*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)Warning, integration of abs or sign assumes constant
 sign by intervals (correct if the argument is real):Check [abs(t_nostep^2-
1)]Evaluation time: 2.76index.cc index_m i_lex_is_greater Error: Bad Argume
nt Value
```

maple [B] time = 2.06, size = 550, normalized size = 2.40

$$-\frac{c^4\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(2\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,(\cos^4(fx+e))\sin(fx+e)\sqrt{2}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)+11\sqrt{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/2*c^4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(2*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*cos(f*x+e)^4*sin(f*x+e)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+11*(-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e
)+1)/sin(f*x+e))*cos(f*x+e)^4*sin(f*x+e)-4*sin(f*x+e)*cos(f*x+e)^2*2^(1/2)*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-22*(-2*cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/si
n(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+6*cos(f*x+e)^5+2*2^(1/2)*sin(f*x+e)*arcta
nh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+11*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)
+1)/sin(f*x+e))-32*cos(f*x+e)^3+36*cos(f*x+e)^2-6*cos(f*x+e)-4)/sin(f*x+e)^
5/a^3
```

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((c-c*sec(f*x+e))^4/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(c-\frac{c}{\cos(e+f\,x)}\right)^4}{\left(a+\frac{a}{\cos(e+f\,x)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^4/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$c^4\left(\int\left(-\frac{4\sec(e+fx)}{a^2\sqrt{a\sec(e+fx)+a}\,\sec^2(e+fx)+2a^2\sqrt{a\sec(e+fx)+a}\,\sec(e+fx)+a^2\sqrt{a\sec(e+fx)+a}}\right)\,d\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**4/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] c**4*(Integral(-4*sec(e + f*x)/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)*
*2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f*x
) + a)), x) + Integral(6*sec(e + f*x)**2/(a**2*sqrt(a*sec(e + f*x) + a)*sec
(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*s
ec(e + f*x) + a)), x) + Integral(-4*sec(e + f*x)**3/(a**2*sqrt(a*sec(e + f*
x) + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a*
*2*sqrt(a*sec(e + f*x) + a)), x) + Integral(sec(e + f*x)**4/(a**2*sqrt(a*se
c(e + f*x) + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f
*x) + a**2*sqrt(a*sec(e + f*x) + a)), x) + Integral(1/(a**2*sqrt(a*sec(e +
f*x) + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) +
a**2*sqrt(a*sec(e + f*x) + a)), x))
```

3.81 $\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=191

$$\frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{7c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{2\sqrt{2}a^{5/2}f}-\frac{c^3\sin(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}{4a^2f\sqrt{a\sec(e+fx)+a}}+\frac{c^3\sin^2(e+fx)\tan(e+}{4af(a\sec(e+}$$

```
[Out] 2*c^3*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f-7/4*c^3*a
rctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f*2^(1
/2)-1/4*c^3*sec(1/2*e+1/2*f*x)^2*sin(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)+1/
4*c^3*sec(1/2*e+1/2*f*x)^4*sin(f*x+e)^2*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(3/
2)
```

Rubi [A] time = 0.25, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 470, 578, 522, 203}

$$-\frac{c^3\sin(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}{4a^2f\sqrt{a\sec(e+fx)+a}}+\frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{7c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{2\sqrt{2}a^{5/2}f}+\frac{c^3\sin^2(e+fx)\tan(e}{4af(a\sec(e}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*f)
 - (7*c^3*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])]
)/(2*Sqrt[2]*a^(5/2)*f) - (c^3*Sec[(e + f*x)/2]^2*Sin[e + f*x])/(4*a^2*f*Sq
rt[a + a*Sec[e + f*x]]) + (c^3*Sec[(e + f*x)/2]^4*Sin[e + f*x]^2*Tan[e + f*
x])/(4*a*f*(a + a*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 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 578

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(g^(n - 1)*(b*e - a*f)*
```

```
(g*x)^(m - n + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)
*(p + 1)), x] - Dist[g^n/(b*n*(b*c - a*d)*(p + 1)), Int[(g*x)^(m - n)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*(b*e - a*f)*(m - n + 1) + (d*(b*e - a*f
)*(m + n*q + 1) - b*n*(c*f - d*e)*(p + 1))*x^n, x], x], x] /; FreeQ[{a, b,
c, d, e, f, g, q}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m - n + 1, 0]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^3}{(a+a\sec(e+fx))^{5/2}}\,dx = -\left(\left(a^3c^3\right)\int \frac{\tan^6(e+fx)}{(a+a\sec(e+fx))^{11/2}}\,dx\right)$$

$$= \frac{\left(2ac^3\right)\operatorname{Subst}\left(\int \frac{x^6}{\left(1+ax^2\right)\left(2+ax^2\right)^3}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= \frac{c^3\sec^4\left(\frac{1}{2}(e+fx)\right)\sin^2(e+fx)\tan(e+fx)}{4af(a+a\sec(e+fx))^{3/2}} + \frac{c^3\operatorname{Subst}\left(\int \frac{x^2\left(6+2ax^2\right)}{\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx, x,\right.}{2af}$$

$$= -\frac{c^3\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{4a^2f\sqrt{a+a\sec(e+fx)}} + \frac{c^3\sec^4\left(\frac{1}{2}(e+fx)\right)\sin^2(e+fx)\tan(e+fx)}{4af(a+a\sec(e+fx))^{3/2}}$$

$$= -\frac{c^3\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{4a^2f\sqrt{a+a\sec(e+fx)}} + \frac{c^3\sec^4\left(\frac{1}{2}(e+fx)\right)\sin^2(e+fx)\tan(e+fx)}{4af(a+a\sec(e+fx))^{3/2}}$$

$$= \frac{2c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}f} - \frac{7c^3\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{2\sqrt{2}a^{5/2}f} - \frac{c^3\sec^2\left(\frac{1}{2}(e+fx)\right)s}{4a^2f\sqrt{a+a\sec(}}$$

Mathematica [A] time = 1.59, size = 136, normalized size = 0.71

$$-\frac{c^3\cot\left(\frac{1}{2}(e+fx)\right)\left((8\cos(e+fx)-3\cos(2(e+fx))-5)\sec^4\left(\frac{1}{2}(e+fx)\right)-32\sqrt{\sec(e+fx)-1}\tan^{-1}\left(\sqrt{se}\right.\right.}{16a^2f\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] -1/16*(c^3*Cot[(e + f*x)/2]*((-5 + 8*Cos[e + f*x] - 3*Cos[2*(e + f*x)])*Sec
[(e + f*x)/2]^4 - 32*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Sqrt[-1 + Sec[e + f*x]
```

```
] + 28*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Sqrt[-1 + Sec[e + f*
x]]))/(a^2*f*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 1.98, size = 645, normalized size = 3.38

$$\left[-\frac{7\sqrt{2}\left(c^3\cos\left(fx+e\right)^3+3c^3\cos\left(fx+e\right)^2+3c^3\cos\left(fx+e\right)+c^3\right)\sqrt{-a}\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin}{\cos(fx+e)^2+2}\right.}{} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(7*sqrt(2)*(c^3*cos(f*x + e)^3 + 3*c^3*cos(f*x + e)^2 + 3*c^3*cos(f*x
 + e) + c^3)*sqrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/co
s(f*x + e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x +
e) + a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 8*(c^3*cos(f*x + e)^3 + 3*
c^3*cos(f*x + e)^2 + 3*c^3*cos(f*x + e) + c^3)*sqrt(-a)*log((2*a*cos(f*x +
e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(
f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 4*(3*c^3*cos(f*x + e)^
2 - c^3*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))
/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^
3*f), 1/4*(7*sqrt(2)*(c^3*cos(f*x + e)^3 + 3*c^3*cos(f*x + e)^2 + 3*c^3*cos
(f*x + e) + c^3)*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 8*(c^3*cos(f*x + e)^3 + 3*c^3*c
os(f*x + e)^2 + 3*c^3*cos(f*x + e) + c^3)*sqrt(a)*arctan(sqrt((a*cos(f*x +
e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 2*(3*c^3*cos(f
*x + e)^2 - c^3*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f
*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x +
 e) + a^3*f)]
```

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((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(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
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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_no
step/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
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pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assume
s constant sign by intervals (correct if the argument is real):Check [abs(c
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os(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nos
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p+exp(1)) were not checkedUnable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
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sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes con
stant sign by intervals (correct if the argument is real):Check [abs(t_nost
ep^2-1)]Evaluation time: 2.27index.cc index_m i_lex_is_greater Error: Bad A
rgument Value
```

maple [B] time = 2.11, size = 553, normalized size = 2.90

$$\frac{c^3\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\,\left(-1+\cos\left(fx+e\right)\right)\left(4\sin\left(fx+e\right)\left(\cos^2\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+\cdots}}}{2\cos\cdots}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] 1/4*c^3/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))*(4*sin(f*x+e)
*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+8*cos(f*x+e
)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+7*(-2*cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x
+e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+4*2^(1/2)*sin(f*x+e)*
arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1
/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+14*cos(f*x+e)*sin(f*x+e)*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f
*x+e)-cos(f*x+e)+1)/sin(f*x+e))+7*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/si
n(f*x+e))-6*cos(f*x+e)^3+8*cos(f*x+e)^2-2*cos(f*x+e))/(1+cos(f*x+e))/sin(f*
x+e)^3/a^3
```

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((c-c*sec(f*x+e))^3/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^3}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^3/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$-c^3\left(\int \frac{3\sec\left(e+fx\right)}{a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec^2\left(e+fx\right)+2a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a^2\sqrt{a\sec\left(e+fx\right)+a}}\,dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**3/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] -c**3*(Integral(3*sec(e + f*x)/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)*
*2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f*x
) + a)), x) + Integral(-3*sec(e + f*x)**2/(a**2*sqrt(a*sec(e + f*x) + a)*se
c(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*
sec(e + f*x) + a)), x) + Integral(sec(e + f*x)**3/(a**2*sqrt(a*sec(e + f*x)
 + a)*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2
*sqrt(a*sec(e + f*x) + a)), x) + Integral(-1/(a**2*sqrt(a*sec(e + f*x) + a)
*sec(e + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt
(a*sec(e + f*x) + a)), x))
```

3.82 $\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=189

$$\frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{11c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{4\sqrt{2}\,a^{5/2}f}-\frac{3c^2\sin(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}{8a^2f\sqrt{a\sec(e+fx)+a}}-\frac{c^2\sin(e+fx)\cos}{4a^2f\sqrt{a\,s}}$$

```
[Out] 2*c^2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f-11/8*c^2*
arctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f*2^(
1/2)-3/8*c^2*sec(1/2*e+1/2*f*x)^2*sin(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)-1
/4*c^2*cos(f*x+e)*sec(1/2*e+1/2*f*x)^4*sin(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1
/2)
```

Rubi [A] time = 0.23, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3904, 3887, 470, 527, 522, 203}

$$-\frac{3c^2\sin(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}{8a^2f\sqrt{a\sec(e+fx)+a}}+\frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{11c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{4\sqrt{2}\,a^{5/2}f}-\frac{c^2\sin(e+fx)\,c}{4a^2f\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*f)
 - (11*c^2*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])
])/(4*Sqrt[2]*a^(5/2)*f) - (3*c^2*Sec[(e + f*x)/2]^2*Sin[e + f*x])/(8*a^2*f
*Sqrt[a + a*Sec[e + f*x]]) - (c^2*Cos[e + f*x]*Sec[(e + f*x)/2]^4*Sin[e + f
*x])/(4*a^2*f*Sqrt[a + a*Sec[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 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 527

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_.)*((e_) + (f
_.)*(x_)^(n_)), x_Symbol] :> -Simp[((b*e - a*f)*x*(a + b*x^n)^(p + 1)*(c +
```

```
d*x^n)^(q + 1))/(a*n*(b*c - a*d)*(p + 1)), x] + Dist[1/(a*n*(b*c - a*d)*(p
+ 1)), Int[(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*(b*e - a*f) + e*n*(b*c
- a*d)*(p + 1) + d*(b*e - a*f)*(n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ
[{a, b, c, d, e, f, n, q}, x] && LtQ[p, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^2}{(a+a\sec(e+fx))^{5/2}}\,dx=\left(a^2c^2\right)\int \frac{\tan^4(e+fx)}{(a+a\sec(e+fx))^{9/2}}\,dx$$

$$=-\frac{\left(2c^2\right)\text{Subst}\left(\int \frac{x^4}{\left(1+ax^2\right)\left(2+ax^2\right)^3}\,dx,x,-\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$=-\frac{c^2\cos(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{4a^2f\sqrt{a+a\sec(e+fx)}}-\frac{c^2\,\text{Subst}\left(\int \frac{2-2ax^2}{\left(1+ax^2\right)\left(2+ax^2\right)^2}\,dx,x,-\cdots\right.}{2a^2f}$$

$$=-\frac{3c^2\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{8a^2f\sqrt{a+a\sec(e+fx)}}-\frac{c^2\cos(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{4a^2f\sqrt{a+a\sec(e+fx)}}-$$

$$=-\frac{3c^2\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{8a^2f\sqrt{a+a\sec(e+fx)}}-\frac{c^2\cos(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{4a^2f\sqrt{a+a\sec(e+fx)}}-$$

$$=\frac{2c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}f}-\frac{11c^2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{4\sqrt{2}\,a^{5/2}f}-\frac{3c^2\sec^2\left(\frac{1}{2}(e+fx)\right)\text{si}}{8a^2f\sqrt{a+a\sec(e}}$$

Mathematica [A] time = 1.56, size = 136, normalized size = 0.72

$$-\frac{c^2\cot\left(\frac{1}{2}(e+fx)\right)\left((8\cos(e+fx)-7\cos(2(e+fx))-1)\sec^4\left(\frac{1}{2}(e+fx)\right)-64\sqrt{\sec(e+fx)-1}\,\tan^{-1}\left(\sqrt{\sec(e}\right.\right.}{32a^2f\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] -1/32*(c^2*Cot[(e + f*x)/2]*((-1 + 8*Cos[e + f*x] - 7*Cos[2*(e + f*x)])*Sec
[(e + f*x)/2]^4 - 64*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Sqrt[-1 + Sec[e + f*x]
```

] + 44*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Sqrt[-1 + Sec[e + f*x]]))/(a^2*f*Sqrt[a*(1 + Sec[e + f*x])])

fricas [A] time = 1.53, size = 645, normalized size = 3.41

$$\left[-\frac{11\sqrt{2}\left(c^2\cos\left(fx+e\right)^3+3\,c^2\cos\left(fx+e\right)^2+3\,c^2\cos\left(fx+e\right)+c^2\right)\sqrt{-a}\,\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+\right.}{\cos\left(fx+\right.}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")

[Out] [-1/16*(11*sqrt(2)*(c^2*cos(f*x + e)^3 + 3*c^2*cos(f*x + e)^2 + 3*c^2*cos(f*x + e) + c^2)*sqrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 16*(c^2*cos(f*x + e)^3 + 3*c^2*cos(f*x + e)^2 + 3*c^2*cos(f*x + e) + c^2)*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 4*(7*c^2*cos(f*x + e)^2 + 3*c^2*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f), 1/8*(11*sqrt(2)*(c^2*cos(f*x + e)^3 + 3*c^2*cos(f*x + e)^2 + 3*c^2*cos(f*x + e) + c^2)*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 16*(c^2*cos(f*x + e)^3 + 3*c^2*cos(f*x + e)^2 + 3*c^2*cos(f*x + e) + c^2)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 2*(7*c^2*cos(f*x + e)^2 + 3*c^2*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f)]

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((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(5/2),x, algorithm="giac")

[Out] Exception raised: TypeError >> An error occurred running a Giac command:INPUT: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 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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant sign by intervals (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable

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ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
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```
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sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)War
ning, integration of abs or sign assumes constant sign by intervals (correc
t if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.83in
dex.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.88, size = 545, normalized size = 2.88

$$-\frac{c^2\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(8\sin(fx+e)\left(\cos^2(fx+e)\right)\sqrt{2}\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)+16\,\mathrm{cc}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/8*c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(8*sin(f*x+e)*cos(f*x+e)^2*2
^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+16*cos(f*x+e)*sin(f*x+e)*2
^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+11*(-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e
)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+8*2^(1/2)*sin(f*x+e)*arctanh(1/2*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)+22*cos(f*x+e)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x
+e)+1)/sin(f*x+e))+11*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-14
*cos(f*x+e)^3+8*cos(f*x+e)^2+6*cos(f*x+e))/(1+cos(f*x+e))^2/sin(f*x+e)/a^3
```

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

$$\int \frac{\left(c\sec\left(fx+e\right)-c\right)^2}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^2/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*sec(f*x + e) - c)^2/(a*sec(f*x + e) + a)^(5/2), x)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^2}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^2/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$c^2\left(\int\left(-\frac{2\sec\left(e+fx\right)}{a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec^2\left(e+fx\right)+2a^2\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a^2\sqrt{a\sec\left(e+fx\right)+a}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**2/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] c**2*(Integral(-2*sec(e + f*x)/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)*
*2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f*x
) + a)), x) + Integral(sec(e + f*x)**2/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e
 + f*x)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec
(e + f*x) + a)), x) + Integral(1/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x
)**2 + 2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f
*x) + a)), x))
```

3.83 $\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=148

$$\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{23c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{8\sqrt{2}\,a^{5/2}f}-\frac{7c\tan(e+fx)}{8af(a\sec(e+fx)+a)^{3/2}}-\frac{c\tan(e+fx)}{2f(a\sec(e+fx)+a)^{5/2}}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f-23/16*c*arc
tan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f*2^(1/2
)-1/2*c*tan(f*x+e)/f/(a+a*sec(f*x+e))^(5/2)-7/8*c*tan(f*x+e)/a/f/(a+a*sec(f
*x+e))^(3/2)
```

Rubi [A] time = 0.19, antiderivative size = 181, normalized size of antiderivative = 1.22, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {3904, 3887, 471, 527, 522, 203}

$$-\frac{7c\sin(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}{16a^2f\sqrt{a\sec(e+fx)+a}}+\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{23c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{8\sqrt{2}\,a^{5/2}f}-\frac{c\sin(e+fx)\cos(e+f}{8a^2f\sqrt{a\sec(e}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*f) -
 (23*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])])/(
8*Sqrt[2]*a^(5/2)*f) - (7*c*Sec[(e + f*x)/2]^2*Sin[e + f*x])/(16*a^2*f*Sqrt
[a + a*Sec[e + f*x]]) - (c*Cos[e + f*x]*Sec[(e + f*x)/2]^4*Sin[e + f*x])/(8
*a^2*f*Sqrt[a + a*Sec[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 471

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> Simp[(e^(n - 1)*(e*x)^(m - n + 1)*(a + b*x^n)^(p + 1)
*(c + d*x^n)^(q + 1))/(n*(b*c - a*d)*(p + 1)), x] - Dist[e^n/(n*(b*c - a*d)
*(p + 1)), Int[(e*x)^(m - n)*(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*(m -
n + 1) + d*(m + n*(p + q + 1) + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e,
 q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[p, -1] && GeQ[n, m - n +
1] && GtQ[m - n + 1, 0] && IntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 527

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_.)*((e_) + (f
_.)*(x_)^(n_)), x_Symbol] :> -Simp[((b*e - a*f)*x*(a + b*x^n)^(p + 1)*(c +
d*x^n)^(q + 1))/(a*n*(b*c - a*d)*(p + 1)), x] + Dist[1/(a*n*(b*c - a*d)*(p
```

```
+ 1)), Int[(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*(b*e - a*f) + e*n*(b*c
- a*d)*(p + 1) + d*(b*e - a*f)*(n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ
[{a, b, c, d, e, f, n, q}, x] && LtQ[p, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] && !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{c-c\sec(e+fx)}{(a+a\sec(e+fx))^{5/2}}\,dx = -\left((ac)\int \frac{\tan^2(e+fx)}{(a+a\sec(e+fx))^{7/2}}\,dx\right)$$
$$= \frac{(2c)\,\text{Subst}\left(\int \frac{x^2}{(1+ax^2)(2+ax^2)^3}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{af}$$
$$= -\frac{c\cos(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{8a^2f\sqrt{a+a\sec(e+fx)}} - \frac{c\,\text{Subst}\left(\int \frac{1-3ax^2}{(1+ax^2)(2+ax^2)^2}\,dx, x, -\right.}{2a^2f}$$
$$= -\frac{7c\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{16a^2f\sqrt{a+a\sec(e+fx)}} - \frac{c\cos(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{8a^2f\sqrt{a+a\sec(e+fx)}} -$$
$$= -\frac{7c\sec^2\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{16a^2f\sqrt{a+a\sec(e+fx)}} - \frac{c\cos(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)\sin(e+fx)}{8a^2f\sqrt{a+a\sec(e+fx)}} -$$
$$= \frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}f} - \frac{23c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{8\sqrt{2}a^{5/2}f} - \frac{7c\sec^2\left(\frac{1}{2}(e+fx)\right)\text{s}}{16a^2f\sqrt{a+a\sec(}}$$

Mathematica [A] time = 1.49, size = 134, normalized size = 0.91

$$-\frac{c\cot\left(\frac{1}{2}(e+fx)\right)\left((8\cos(e+fx)-11\cos(2(e+fx))+3)\sec^4\left(\frac{1}{2}(e+fx)\right)-128\sqrt{\sec(e+fx)-1}\tan^{-1}\left(\sqrt{\text{s}}\right.\right.}{64a^2f\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] -1/64*(c*Cot[(e + f*x)/2]*((3 + 8*Cos[e + f*x] - 11*Cos[2*(e + f*x)])*Sec[(
e + f*x)/2]^4 - 128*ArcTan[Sqrt[-1 + Sec[e + f*x]]]*Sqrt[-1 + Sec[e + f*x]]
 + 92*Sqrt[2]*ArcTan[Sqrt[-1 + Sec[e + f*x]]/Sqrt[2]]*Sqrt[-1 + Sec[e + f*x
]]))/(a^2*f*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [B] time = 1.03, size = 605, normalized size = 4.09

$$\left[-\frac{23\,\sqrt{2}\left(c\cos\left(fx+e\right)^{3}+3\,c\cos\left(fx+e\right)^{2}+3\,c\cos\left(fx+e\right)+c\right)\sqrt{-a}\,\log\left(-\frac{2\,\sqrt{2}\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx\right.}{\cos\left(fx+e\right)^{2}+2\,\mathrm{co}}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/32*(23*sqrt(2)*(c*cos(f*x + e)^3 + 3*c*cos(f*x + e)^2 + 3*c*cos(f*x + e
) + c)*sqrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x
+ e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a
)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 32*(c*cos(f*x + e)^3 + 3*c*cos(f
*x + e)^2 + 3*c*cos(f*x + e) + c)*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt
(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*
cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 4*(11*c*cos(f*x + e)^2 + 7*c*cos(f*
x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*
x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f), 1/16*(23
*sqrt(2)*(c*cos(f*x + e)^3 + 3*c*cos(f*x + e)^2 + 3*c*cos(f*x + e) + c)*sqr
t(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(s
qrt(a)*sin(f*x + e))) - 32*(c*cos(f*x + e)^3 + 3*c*cos(f*x + e)^2 + 3*c*cos
(f*x + e) + c)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f
*x + e)/(sqrt(a)*sin(f*x + e))) - 2*(11*c*cos(f*x + e)^2 + 7*c*cos(f*x + e)
)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)
^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f)]
```

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((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(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
e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
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ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
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x/2)Warning, integration of abs or sign assumes constant sign by intervals
(correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time:
 1.45index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.62, size = 543, normalized size = 3.67

$$-\frac{c\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(16\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)+32\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/16*c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(16*sin(f*x+e)*cos(f*x+e)^2*2
^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+32*cos(f*x+e)*sin(f*x+e)*2
^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+23*(-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e
)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+16*2^(1/2)*sin(f*x+e)*arctanh(1/2*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)+46*cos(f*x+e)*sin(f*x+e)*(-2*cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*
x+e)+1)/sin(f*x+e))+23*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln((
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-2
2*cos(f*x+e)^3+8*cos(f*x+e)^2+14*cos(f*x+e))/(1+cos(f*x+e))^2/sin(f*x+e)/a^
3
```

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

$$-\int \frac{c\sec\left(fx+e\right)-c}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((c*sec(f*x + e) - c)/(a*sec(f*x + e) + a)^(5/2), x)
```

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

$$\int \frac{c-\frac{c}{\cos\left(e+f\,x\right)}}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c - c/cos(e + f*x))/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$-c\left(\int \frac{\sec\left(e+fx\right)}{a^{2}\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{2}\left(e+fx\right)+2a^{2}\sqrt{a\sec\left(e+fx\right)+a}\,\sec\left(e+fx\right)+a^{2}\sqrt{a\sec\left(e+fx\right)+a}}\,d\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] -c*(Integral(sec(e + f*x)/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**2 +
2*a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f*x) + a
)), x) + Integral(-1/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**2 + 2*a**
2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x) + a**2*sqrt(a*sec(e + f*x) + a)), x
))
```

3.84 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))}\,dx$

Optimal. Leaf size=230

$$\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}cf}-\frac{71\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{32\sqrt{2}\,a^{5/2}cf}-\frac{7\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{32a^3cf}+\frac{\cos^2(e+fx)\cot(e+\ldots}{}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/c/f-71/64*arcta
n(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/c/f*2^(1/2
)-7/32*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/a^3/c/f+13/32*cos(f*x+e)*cot(f*x+e
)*sec(1/2*e+1/2*f*x)^2*(a+a*sec(f*x+e))^(1/2)/a^3/c/f+1/16*cos(f*x+e)^2*cot
(f*x+e)*sec(1/2*e+1/2*f*x)^4*(a+a*sec(f*x+e))^(1/2)/a^3/c/f
```

Rubi [A] time = 0.31, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3904, 3887, 472, 579, 583, 522, 203}

$$-\frac{7\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{32a^3cf}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}cf}-\frac{71\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{32\sqrt{2}\,a^{5/2}cf}+\frac{\cos^2(e+fx)\cot(e+\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*c*f) -
 (71*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])])/(32
*Sqrt[2]*a^(5/2)*c*f) - (7*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(32*a^3*c
*f) + (13*Cos[e + f*x]*Cot[e + f*x]*Sec[(e + f*x)/2]^2*Sqrt[a + a*Sec[e + f
*x]])/(32*a^3*c*f) + (Cos[e + f*x]^2*Cot[e + f*x]*Sec[(e + f*x)/2]^4*Sqrt[a
 + a*Sec[e + f*x]])/(16*a^3*c*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 472

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(b*(e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n
)^(q + 1))/(a*e*n*(b*c - a*d)*(p + 1)), x] + Dist[1/(a*n*(b*c - a*d)*(p + 1
)), Int[(e*x)^m*(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*b*(m + 1) + n*(b*c
 - a*d)*(p + 1) + d*b*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a,
b, c, d, e, m, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[p, -1] && I
ntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 579

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> -Simp[((b*e - a*f)*(g*x)^(m
```

```
+ 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*g*n*(b*c - a*d)*(p + 1)),
x] + Dist[1/(a*n*(b*c - a*d)*(p + 1)), Int[(g*x)^m*(a + b*x^n)^(p + 1)*(c +
 d*x^n)^q*Simp[c*(b*e - a*f)*(m + 1) + e*n*(b*c - a*d)*(p + 1) + d*(b*e - a
*f)*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m, q}, x] && IGtQ[n, 0] && LtQ[p, -1]
```

Rule 583

```
Int[((g_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_
))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(e*(g*x)^(m + 1)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*c*g*(m + 1)), x] + Dist[1/(a*c*g^n*(
m + 1)), Int[(g*x)^(m + n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m + 1) -
 e*(b*c + a*d)*(m + n + 1) - e*n*(b*c*p + a*d*q) - b*e*d*(m + n*(p + q + 2)
 + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0
] && LtQ[m, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))}\,dx = -\frac{\int \frac{\cot^2(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx}{ac}$$

$$= \frac{2\,\text{Subst}\left(\int \frac{1}{x^2(1+ax^2)(2+ax^2)^3}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^3cf}$$

$$= \frac{\cos^2(e+fx)\cot(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)\sqrt{a+a\sec(e+fx)}}{16a^3cf}$$

$$= \frac{13\cos(e+fx)\cot(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)\sqrt{a+a\sec(e+fx}}{32a^3cf}$$

$$= -\frac{7\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{32a^3cf} + \frac{13\cos(e+fx)\cot(e+f}{}$$

$$= -\frac{7\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{32a^3cf} + \frac{13\cos(e+fx)\cot(e+f}{}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}cf} - \frac{71\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{32\sqrt{2}\,a^{5/2}cf} - \frac{7\cot}{}$$

Mathematica [A] time = 1.52, size = 158, normalized size = 0.69

$$\frac{\tan^3\left(\frac{1}{2}(e+fx)\right)\left(24\cos(e+fx)+27\cos(2(e+fx))+512\cos^4\left(\frac{1}{2}(e+fx)\right)\sqrt{\sec(e+fx)-1}\tan^{-1}\left(\sqrt{\sec(e\right.\right.}{64a^2cf(\cos(e+fx)-1)^2\sqrt{a(\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])),x]
```

```
[Out] ((13 + 24*Cos[e + f*x] + 27*Cos[2*(e + f*x)] + 512*ArcTan[Sqrt[-1 + Sec[e +
 f*x]]]*Cos[(e + f*x)/2]^4*Sqrt[-1 + Sec[e + f*x]] - 284*Sqrt[2]*ArcTan[Sqr
t[-1 + Sec[e + f*x]]/Sqrt[2]]*Cos[(e + f*x)/2]^4*Sqrt[-1 + Sec[e + f*x]])*T
an[(e + f*x)/2]^3)/(64*a^2*c*f*(-1 + Cos[e + f*x])^2*Sqrt[a*(1 + Sec[e + f*
x])])
```

fricas [A] time = 0.66, size = 608, normalized size = 2.64

$$\left[-\frac{71\sqrt{2}\left(\cos\left(fx+e\right)^2+2\cos\left(fx+e\right)+1\right)\sqrt{-a}\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)-3a\cos(fx+e)^2-2a\,c}{\cos(fx+e)^2+2\cos(fx+e)+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [-1/128*(71*sqrt(2)*(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)*sqrt(-a)*log(-(2*
sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f
```

```
*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f*x + e)^2 + 2*co
s(f*x + e) + 1))*sin(f*x + e) + 64*(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)*sq
rt(-a)*log(-(8*a*cos(f*x + e)^3 + 4*(2*cos(f*x + e)^2 - cos(f*x + e))*sqrt(
-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 7*a*cos(f*x + e)
 + a)/(cos(f*x + e) + 1))*sin(f*x + e) - 4*(27*cos(f*x + e)^3 + 12*cos(f*x
+ e)^2 - 7*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((a^3*c*f
*cos(f*x + e)^2 + 2*a^3*c*f*cos(f*x + e) + a^3*c*f)*sin(f*x + e)), 1/64*(71
*sqrt(2)*(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)*sqrt(a)*arctan(sqrt(2)*sqrt(
(a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))*sin
(f*x + e) + 64*(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)*sqrt(a)*arctan(2*sqrt(
a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*c
os(f*x + e)^2 + a*cos(f*x + e) - a))*sin(f*x + e) + 2*(27*cos(f*x + e)^3 +
12*cos(f*x + e)^2 - 7*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
)/((a^3*c*f*cos(f*x + e)^2 + 2*a^3*c*f*cos(f*x + e) + a^3*c*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(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),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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ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
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ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
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sitive. Hint: run assume to make assumptions on a variableWarning, assuming
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-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check s
ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nost
ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi
/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*
pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
 to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (
2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>
(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check
sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/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)Warning, integration of abs or sign assumes constan
t sign by intervals (correct if the argument is real):Check [abs(t_nostep^2
-1)]Evaluation time: 1.24index.cc index_m i_lex_is_greater Error: Bad Argum
ent Value
```

maple [B] time = 2.16, size = 545, normalized size = 2.37

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(-1+\cos\left(fx+e\right)\right)^{2}\left(64\sin\left(fx+e\right)\left(\cos^{2}\left(fx+e\right)\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}}{2\cos(\cdots}\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -1/64/c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))^2*(64*sin(f*x
```

```
+e)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+128*cos(
f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+71*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*s
in(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)+64*2^(1/2)*sin(
f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+
e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)+142*cos(f*x+e)*sin(f*x+e)*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))+71*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x
+e)+1)/sin(f*x+e))-54*cos(f*x+e)^3-24*cos(f*x+e)^2+14*cos(f*x+e))/sin(f*x+e
)^5/a^3
```

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

$$-\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(c\sec\left(fx+e\right)-c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] -integrate(1/((a*sec(f*x + e) + a)^(5/2)*(c*sec(f*x + e) - c)), x)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))), x)
```

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

$$-\frac{\int \frac{1}{a^{2}\sqrt{a\sec\left(e+fx\right)+a}\sec^{3}\left(e+fx\right)+a^{2}\sqrt{a\sec\left(e+fx\right)+a}\sec^{2}\left(e+fx\right)-a^{2}\sqrt{a\sec\left(e+fx\right)+a}\sec\left(e+fx\right)-a^{2}\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e)),x)
```

```
[Out] -Integral(1/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**3 + a**2*sqrt(a*se
c(e + f*x) + a)*sec(e + f*x)**2 - a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x
) - a**2*sqrt(a*sec(e + f*x) + a)), x)/c
```

3.85 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^2}\,dx$

Optimal. Leaf size=269

$$\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}c^2f}-\frac{107\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{64\sqrt{2}\,a^{5/2}c^2f}+\frac{43\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{96a^4c^2f}-\frac{\cos^2(e+fx)\cot^3(e}{}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/c^2/f+43/96*cot
(f*x+e)^3*(a+a*sec(f*x+e))^(3/2)/a^4/c^2/f-15/32*cos(f*x+e)*cot(f*x+e)^3*se
c(1/2*e+1/2*f*x)^2*(a+a*sec(f*x+e))^(3/2)/a^4/c^2/f-1/16*cos(f*x+e)^2*cot(f
*x+e)^3*sec(1/2*e+1/2*f*x)^4*(a+a*sec(f*x+e))^(3/2)/a^4/c^2/f-107/128*arcta
n(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/c^2/f*2^(1
/2)+21/64*cot(f*x+e)*(a+a*sec(f*x+e))^(1/2)/a^3/c^2/f
```

Rubi [A] time = 0.34, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3904, 3887, 472, 579, 583, 522, 203}

$$\frac{43\cot^3(e+fx)(a\sec(e+fx)+a)^{3/2}}{96a^4c^2f}+\frac{21\cot(e+fx)\sqrt{a\sec(e+fx)+a}}{64a^3c^2f}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}c^2f}-\frac{107\tan^{-1}\left(\frac{}{\sqrt{2}}\right)}{64\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*c^2*f)
 - (107*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])])/
(64*Sqrt[2]*a^(5/2)*c^2*f) + (21*Cot[e + f*x]*Sqrt[a + a*Sec[e + f*x]])/(64
*a^3*c^2*f) + (43*Cot[e + f*x]^3*(a + a*Sec[e + f*x])^(3/2))/(96*a^4*c^2*f)
 - (15*Cos[e + f*x]*Cot[e + f*x]^3*Sec[(e + f*x)/2]^2*(a + a*Sec[e + f*x])^
(3/2))/(32*a^4*c^2*f) - (Cos[e + f*x]^2*Cot[e + f*x]^3*Sec[(e + f*x)/2]^4*(
a + a*Sec[e + f*x])^(3/2))/(16*a^4*c^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 472

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(b*(e*x)^(m + 1)*(a + b*x^n)^(p + 1)*(c + d*x^n
)^(q + 1))/(a*e*n*(b*c - a*d)*(p + 1)), x] + Dist[1/(a*n*(b*c - a*d)*(p + 1
)), Int[(e*x)^m*(a + b*x^n)^(p + 1)*(c + d*x^n)^q*Simp[c*b*(m + 1) + n*(b*c
 - a*d)*(p + 1) + d*b*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a,
b, c, d, e, m, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LtQ[p, -1] && I
ntBinomialQ[a, b, c, d, e, m, n, p, q, x]
```

Rule 522

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(
n_))), x_Symbol] :> Dist[(b*e - a*f)/(b*c - a*d), Int[1/(a + b*x^n), x], x]
 - Dist[(d*e - c*f)/(b*c - a*d), Int[1/(c + d*x^n), x], x] /; FreeQ[{a, b,
c, d, e, f, n}, x]
```

Rule 579

```
Int[((g_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> -Simp[((b*e - a*f)*(g*x)^(m
+ 1)*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*g*n*(b*c - a*d)*(p + 1)),
x] + Dist[1/(a*n*(b*c - a*d)*(p + 1)), Int[(g*x)^m*(a + b*x^n)^(p + 1)*(c +
 d*x^n)^q*Simp[c*(b*e - a*f)*(m + 1) + e*n*(b*c - a*d)*(p + 1) + d*(b*e - a
*f)*(m + n*(p + q + 2) + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m, q}, x] && IGtQ[n, 0] && LtQ[p, -1]
```

Rule 583

```
Int[((g_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_
))^(q_.)*((e_) + (f_.)*(x_)^(n_)), x_Symbol] :> Simp[(e*(g*x)^(m + 1)*(a +
b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*c*g*(m + 1)), x] + Dist[1/(a*c*g^n*(
m + 1)), Int[(g*x)^(m + n)*(a + b*x^n)^p*(c + d*x^n)^q*Simp[a*f*c*(m + 1) -
 e*(b*c + a*d)*(m + n + 1) - e*n*(b*c*p + a*d*q) - b*e*d*(m + n*(p + q + 2)
 + 1)*x^n, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p, q}, x] && IGtQ[n, 0
] && LtQ[m, -1]
```

Rule 3887

```
Int[cot[(c_.) + (d_.)*(x_)]^(m_.)*(csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_))^(n
_.), x_Symbol] :> Dist[(-2*a^(m/2 + n + 1/2))/d, Subst[Int[(x^m*(2 + a*x^2)
^(m/2 + n - 1/2))/(1 + a*x^2), x], x, Cot[c + d*x]/Sqrt[a + b*Csc[c + d*x]]
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0] && IntegerQ[m/2] && In
tegerQ[n - 1/2]
```

Rule 3904

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(-(a*c))^m, Int[Cot[e + f*x]^(2*m)*(c
 + d*Csc[e + f*x])^(n - m), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && Eq
Q[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m] && RationalQ[n] &&  !(I
ntegerQ[n] && GtQ[m - n, 0])
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^2}\,dx = \frac{\int \frac{\cot^4(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx}{a^2c^2}$$

$$= -\frac{2\,\text{Subst}\left(\int \frac{1}{x^4(1+ax^2)(2+ax^2)^3}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^4c^2f}$$

$$= -\frac{\cos^2(e+fx)\cot^3(e+fx)\sec^4\left(\frac{1}{2}(e+fx)\right)(a+a\sec(e+fx))}{16a^4c^2f}$$

$$= -\frac{15\cos(e+fx)\cot^3(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)(a+a\sec(e+fx}{32a^4c^2f}$$

$$= \frac{43\cot^3(e+fx)(a+a\sec(e+fx))^{3/2}}{96a^4c^2f} - \frac{15\cos(e+fx)\cot^3(e+}{}$$

$$= \frac{21\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{64a^3c^2f} + \frac{43\cot^3(e+fx)(a+a\sec(}{96a^4c^2f}$$

$$= \frac{21\cot(e+fx)\sqrt{a+a\sec(e+fx)}}{64a^3c^2f} + \frac{43\cot^3(e+fx)(a+a\sec(}{96a^4c^2f}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}c^2f} - \frac{107\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{64\sqrt{2}a^{5/2}c^2f} + \frac{21\,\text{co}}{}$$

Mathematica [C] time = 24.17, size = 5650, normalized size = 21.00

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^2),x]
```

```
[Out] Result too large to show
```

fricas [A] time = 0.67, size = 706, normalized size = 2.62

$$\left[-\frac{321\sqrt{2}\left(\cos\left(fx+e\right)^3+\cos\left(fx+e\right)^2-\cos\left(fx+e\right)-1\right)\sqrt{-a}\log\left(-\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)-3a\,\text{c}}{\cos(fx+e)^2+2\cos(fx+e)+}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^2,x, algorithm="fricas"
)
```

```
[Out] [-1/768*(321*sqrt(2)*(cos(f*x + e)^3 + cos(f*x + e)^2 - cos(f*x + e) - 1)*s
qrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a)/(cos(f
```

```
*x + e)^2 + 2*cos(f*x + e) + 1))*sin(f*x + e) + 384*(cos(f*x + e)^3 + cos(f
*x + e)^2 - cos(f*x + e) - 1)*sqrt(-a)*log(-(8*a*cos(f*x + e)^3 + 4*(2*cos(
f*x + e)^2 - cos(f*x + e))*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
*sin(f*x + e) - 7*a*cos(f*x + e) + a)/(cos(f*x + e) + 1))*sin(f*x + e) - 4*
(205*cos(f*x + e)^4 + 71*cos(f*x + e)^3 - 149*cos(f*x + e)^2 - 63*cos(f*x +
 e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((a^3*c^2*f*cos(f*x + e)^3 +
a^3*c^2*f*cos(f*x + e)^2 - a^3*c^2*f*cos(f*x + e) - a^3*c^2*f)*sin(f*x + e)
), 1/384*(321*sqrt(2)*(cos(f*x + e)^3 + cos(f*x + e)^2 - cos(f*x + e) - 1)*
sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)
/(sqrt(a)*sin(f*x + e)))*sin(f*x + e) + 384*(cos(f*x + e)^3 + cos(f*x + e)^
2 - cos(f*x + e) - 1)*sqrt(a)*arctan(2*sqrt(a)*sqrt((a*cos(f*x + e) + a)/co
s(f*x + e))*cos(f*x + e)*sin(f*x + e)/(2*a*cos(f*x + e)^2 + a*cos(f*x + e)
- a))*sin(f*x + e) + 2*(205*cos(f*x + e)^4 + 71*cos(f*x + e)^3 - 149*cos(f*
x + e)^2 - 63*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)))/((a^3*
c^2*f*cos(f*x + e)^3 + a^3*c^2*f*cos(f*x + e)^2 - a^3*c^2*f*cos(f*x + e) -
a^3*c^2*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(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^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
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/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
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(2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)
>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint: run assume t
o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableUnab
le to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
 (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2
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tep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_n
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t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Discon
tinuities at zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
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tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
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n: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep
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able to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>
(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign by int
ervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluatio
n time: 1.26index.cc index_m i_lex_is_greater Error: Bad Argument Value

maple [B] time = 2.33, size = 725, normalized size = 2.70

$$\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(1+\cos\left(fx+e\right)\right)\left(-1+\cos\left(fx+e\right)\right)^{2}\left(384\left(\cos^{3}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^2,x)
```

```
[Out] 1/384/c^2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(1+cos(f*x+e))*(-1+cos(f*x+
e))^2*(384*cos(f*x+e)^3*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
```

```
1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)
*2^(1/2))+384*sin(f*x+e)*cos(f*x+e)^2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x
+e)*2^(1/2))+321*sin(f*x+e)*cos(f*x+e)^3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*ln(((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*
x+e))-384*cos(f*x+e)*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^
(1/2))+321*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))*cos(f*x+e)^2*sin(f*x+e)-
384*2^(1/2)*sin(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin
(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)-321*cos(f*
x+e)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+
cos(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-410*cos(f*x+e)^4-32
1*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(((-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*sin(f*x+e)-cos(f*x+e)+1)/sin(f*x+e))-142*cos(f*x+e)^3+298*c
os(f*x+e)^2+126*cos(f*x+e))/sin(f*x+e)^7/a^3
```

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

$$\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(c\sec\left(fx+e\right)-c\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^2,x, algorithm="maxima"
)
```

```
[Out] integrate(1/((a*sec(f*x + e) + a)^(5/2)*(c*sec(f*x + e) - c)^2), x)
```

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

$$\int \frac{1}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^2),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^2), x)
```

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

$$\frac{\int \frac{1}{a^{2}\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{4}\left(e+fx\right)-2a^{2}\sqrt{a\sec\left(e+fx\right)+a}\,\sec^{2}\left(e+fx\right)+a^{2}\sqrt{a\sec\left(e+fx\right)+a}}\,dx}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**2,x)
```

```
[Out] Integral(1/(a**2*sqrt(a*sec(e + f*x) + a)*sec(e + f*x)**4 - 2*a**2*sqrt(a*s
ec(e + f*x) + a)*sec(e + f*x)**2 + a**2*sqrt(a*sec(e + f*x) + a)), x)/c**2
```

3.86 $\int \sqrt{a + a\sec(e + fx)}\,(c - c\sec(e + fx))^{7/2}\,dx$

Optimal. Leaf size=185

$$\frac{ac^4\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}} - \frac{ac^3\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}} - \frac{ac^2\tan(e+fx)(c-c\sec(e+fx}{2f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] -1/2*a*c^2*(c-c*sec(f*x+e))^(3/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-1/3*a
*c*(c-c*sec(f*x+e))^(5/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+a*c^4*ln(cos(
f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-a*c^3*(c
-c*sec(f*x+e))^(1/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {3906, 3905, 3475}

$$-\frac{ac^3\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}} - \frac{ac^2\tan(e+fx)(c-c\sec(e+fx))^{3/2}}{2f\sqrt{a\sec(e+fx)+a}} + \frac{ac^4\tan(e+fx)\log(\cos(e+fx}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] (a*c^4*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) - (a*c^3*Sqrt[c - c*Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a
 + a*Sec[e + f*x]]) - (a*c^2*(c - c*Sec[e + f*x])^(3/2)*Tan[e + f*x])/(2*f*
Sqrt[a + a*Sec[e + f*x]]) - (a*c*(c - c*Sec[e + f*x])^(5/2)*Tan[e + f*x])/(
3*f*Sqrt[a + a*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3906

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_.), x_Symbol] :> Simp[(2*a*c*Cot[e + f*x]*(c + d*Csc[e + f*x]
)^(n - 1))/(f*(2*n - 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[c, Int[Sqrt[a
+ b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && GtQ[n, 1/2]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}\,dx = -\frac{ac(c-c\sec(e+fx))^{5/2}\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}} + c\int \sqrt{a+a\sec(e+fx)}\,($$

$$= -\frac{ac^2(c-c\sec(e+fx))^{3/2}\tan(e+fx)}{2f\sqrt{a+a\sec(e+fx)}} - \frac{ac(c-c\sec(e+fx))^{5/2}}{3f\sqrt{a+a\sec(e+}}$$

$$= -\frac{ac^3\sqrt{c-c\sec(e+fx)}\,\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{ac^2(c-c\sec(e+fx))^{3/2}\,\mathrm{t}}{2f\sqrt{a+a\sec(e+}}$$

$$= -\frac{ac^3\sqrt{c-c\sec(e+fx)}\,\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{ac^2(c-c\sec(e+fx))^{3/2}\,\mathrm{t}}{2f\sqrt{a+a\sec(e+}}$$

$$= \frac{ac^4\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}} - \frac{ac^3\sqrt{c-c\sec(e+fx}}{f\sqrt{a+a\sec(e}}$$

Mathematica [C] time = 6.14, size = 149, normalized size = 0.81

$$\frac{c^3\csc\left(\frac{1}{2}(e+fx)\right)\sec\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\,\sqrt{c-c\sec(e+fx)}\,\left(-18\cos(2(e+fx))+3if\right.}{24f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] (c^3*Csc[(e + f*x)/2]*(-22 - 18*Cos[2*(e + f*x)] + (3*I)*f*x*Cos[3*(e + f*x
)] + 9*Cos[e + f*x]*(2 + I*f*x - Log[1 + E^((2*I)*(e + f*x))]) - 3*Cos[3*(e
 + f*x)]*Log[1 + E^((2*I)*(e + f*x))])*Sec[(e + f*x)/2]*Sec[e + f*x]^2*Sqrt
[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])/(24*f)
```

fricas [A] time = 0.59, size = 459, normalized size = 2.48

$$\left[-\frac{\left(11\,c^3\cos\left(fx+e\right)^2-7\,c^3\cos\left(fx+e\right)+2\,c^3\right)\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)-3\left(c^3\cos\left(fx+e\right)^3+\right.}{6\left(f\cos\left(fx+e\right)^3+f\,c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [-1/6*((11*c^3*cos(f*x + e)^2 - 7*c^3*cos(f*x + e) + 2*c^3)*sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x +
e) - 3*(c^3*cos(f*x + e)^3 + c^3*cos(f*x + e)^2)*sqrt(-a*c)*log(1/2*(a*c*co
s(f*x + e)^4 - (cos(f*x + e)^3 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e)
 + a*c)/cos(f*x + e)^2))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^2), -1/6*((11*c
^3*cos(f*x + e)^2 - 7*c^3*cos(f*x + e) + 2*c^3)*sqrt((a*cos(f*x + e) + a)/c
os(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) - 6*(c^3*
cos(f*x + e)^3 + c^3*cos(f*x + e)^2)*sqrt(a*c)*arctan(sqrt(a*c)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*cos(f*
x + e)*sin(f*x + e)/(a*c*cos(f*x + e)^2 + a*c)))/(f*cos(f*x + e)^3 + f*cos(
f*x + e)^2)]
```

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((c-c*sec(f*x+e))^(7/2)*(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
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rning, integration of abs or sign assumes constant sign by intervals (corre
ct if the argument is real):Check [abs(t_nostep)]Sign error (%%%{2*c,0%%%}+
%%%{1,2%%%})Evaluation time: 4.6Limit: Max order reached or unable to make
series expansion Error: Bad Argument Value
```

maple [A] time = 2.58, size = 195, normalized size = 1.05

$$-\frac{\left(6\left(\cos^{3}\left(fx+e\right)\right)\ln\left(-\frac{-\sin(fx+e)-1+\cos(fx+e)}{\sin(fx+e)}\right)+6\left(\cos^{3}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos(fx+e)+\sin(fx+e)}{\sin(fx+e)}\right)-6\left(\cos^{3}\left(fx+\right.\right.\right.}{6f\sin}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(7/2)*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/6/f*(6*cos(f*x+e)^3*ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))+6*cos(f*x
+e)^3*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))-6*cos(f*x+e)^3*ln(2/(1+cos
(f*x+e)))+29*cos(f*x+e)^3+18*cos(f*x+e)^2-9*cos(f*x+e)+2)*cos(f*x+e)*(c*(-1
+cos(f*x+e))/cos(f*x+e))^(7/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+
e)/(-1+cos(f*x+e))^3
```

maxima [B] time = 0.89, size = 1289, normalized size = 6.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -1/3*(3*(f*x + e)*c^3*cos(6*f*x + 6*e)^2 + 27*(f*x + e)*c^3*cos(4*f*x + 4*e
)^2 + 27*(f*x + e)*c^3*cos(2*f*x + 2*e)^2 + 3*(f*x + e)*c^3*sin(6*f*x + 6*e
)^2 + 27*(f*x + e)*c^3*sin(4*f*x + 4*e)^2 + 27*(f*x + e)*c^3*sin(2*f*x + 2*
e)^2 + 18*(f*x + e)*c^3*cos(2*f*x + 2*e) + 3*(f*x + e)*c^3 + 18*c^3*sin(2*f
*x + 2*e) - 3*(c^3*cos(6*f*x + 6*e)^2 + 9*c^3*cos(4*f*x + 4*e)^2 + 9*c^3*co
s(2*f*x + 2*e)^2 + c^3*sin(6*f*x + 6*e)^2 + 9*c^3*sin(4*f*x + 4*e)^2 + 18*c
^3*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 9*c^3*sin(2*f*x + 2*e)^2 + 6*c^3*cos
(2*f*x + 2*e) + c^3 + 2*(3*c^3*cos(4*f*x + 4*e) + 3*c^3*cos(2*f*x + 2*e) +
c^3)*cos(6*f*x + 6*e) + 6*(3*c^3*cos(2*f*x + 2*e) + c^3)*cos(4*f*x + 4*e) +
 6*(c^3*sin(4*f*x + 4*e) + c^3*sin(2*f*x + 2*e))*sin(6*f*x + 6*e))*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) + 6*(3*(f*x + e)*c^3*cos(4*f*x + 4*
e) + 3*(f*x + e)*c^3*cos(2*f*x + 2*e) + (f*x + e)*c^3 + 3*c^3*sin(4*f*x + 4
*e) + 3*c^3*sin(2*f*x + 2*e))*cos(6*f*x + 6*e) + 18*(3*(f*x + e)*c^3*cos(2*
f*x + 2*e) + (f*x + e)*c^3)*cos(4*f*x + 4*e) + 18*(c^3*sin(6*f*x + 6*e) + 3
```

```
*c^3*sin(4*f*x + 4*e) + 3*c^3*sin(2*f*x + 2*e))*cos(5/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 44*(c^3*sin(6*f*x + 6*e) + 3*c^3*sin(4*f*x + 4*
e) + 3*c^3*sin(2*f*x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + 18*(c^3*sin(6*f*x + 6*e) + 3*c^3*sin(4*f*x + 4*e) + 3*c^3*sin(2*f*
x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 18*((f*x +
 e)*c^3*sin(4*f*x + 4*e) + (f*x + e)*c^3*sin(2*f*x + 2*e) - c^3*cos(4*f*x +
 4*e) - c^3*cos(2*f*x + 2*e))*sin(6*f*x + 6*e) + 18*(3*(f*x + e)*c^3*sin(2*
f*x + 2*e) + c^3)*sin(4*f*x + 4*e) - 18*(c^3*cos(6*f*x + 6*e) + 3*c^3*cos(4
*f*x + 4*e) + 3*c^3*cos(2*f*x + 2*e) + c^3)*sin(5/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) - 44*(c^3*cos(6*f*x + 6*e) + 3*c^3*cos(4*f*x + 4*e) +
 3*c^3*cos(2*f*x + 2*e) + c^3)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) - 18*(c^3*cos(6*f*x + 6*e) + 3*c^3*cos(4*f*x + 4*e) + 3*c^3*cos(2*
f*x + 2*e) + c^3)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqr
t(a)*sqrt(c)/((2*(3*cos(4*f*x + 4*e) + 3*cos(2*f*x + 2*e) + 1)*cos(6*f*x +
6*e) + cos(6*f*x + 6*e)^2 + 6*(3*cos(2*f*x + 2*e) + 1)*cos(4*f*x + 4*e) + 9
*cos(4*f*x + 4*e)^2 + 9*cos(2*f*x + 2*e)^2 + 6*(sin(4*f*x + 4*e) + sin(2*f*
x + 2*e))*sin(6*f*x + 6*e) + sin(6*f*x + 6*e)^2 + 9*sin(4*f*x + 4*e)^2 + 18
*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 9*sin(2*f*x + 2*e)^2 + 6*cos(2*f*x + 2
*e) + 1)*f)
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{7/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(7/2),x)
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/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((c-c*sec(f*x+e))**(7/2)*(a+a*sec(f*x+e))**(1/2),x)
[Out] Timed out
```

3.87 $\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}\,dx$

Optimal. Leaf size=139

$$\frac{ac^3\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{ac^2\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}}-\frac{ac\tan(e+fx)(c-c\sec(e+fx)}{2f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] -1/2*a*c*(c-c*sec(f*x+e))^(3/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+a*c^3*l
n(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-a*
c^2*(c-c*sec(f*x+e))^(1/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3906, 3905, 3475}

$$-\frac{ac^2\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}}+\frac{ac^3\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{ac\tan(e+fx)(c-c\sec(e+f}{2f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] (a*c^3*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) - (a*c^2*Sqrt[c - c*Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a
 + a*Sec[e + f*x]]) - (a*c*(c - c*Sec[e + f*x])^(3/2)*Tan[e + f*x])/(2*f*Sq
rt[a + a*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3906

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_.), x_Symbol] :> Simp[(2*a*c*Cot[e + f*x]*(c + d*Csc[e + f*x]
)^(n - 1))/(f*(2*n - 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[c, Int[Sqrt[a
+ b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && GtQ[n, 1/2]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}\,dx = -\frac{ac(c-c\sec(e+fx))^{3/2}\tan(e+fx)}{2f\sqrt{a+a\sec(e+fx)}} + c\int \sqrt{a+a\sec(e+fx)}\,($$
$$= -\frac{ac^2\sqrt{c-c\sec(e+fx)}\,\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{ac(c-c\sec(e+fx))^{3/2}\,\text{ta}}{2f\sqrt{a+a\sec(e+}}$$
$$= -\frac{ac^2\sqrt{c-c\sec(e+fx)}\,\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{ac(c-c\sec(e+fx))^{3/2}\,\text{ta}}{2f\sqrt{a+a\sec(e+}}$$
$$= \frac{ac^3\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}} - \frac{ac^2\sqrt{c-c\sec(e+fx}}{f\sqrt{a+a\sec(e}}$$

Mathematica [C] time = 2.31, size = 162, normalized size = 1.17

$$-\frac{c^2e^{-3i(e+fx)}\left(1+e^{2i(e+fx)}\right)^3\left(\cot\left(\frac{1}{2}(e+fx)\right)+i\right)\sec^4(e+fx)\sqrt{a(\sec(e+fx)+1)}\,\sqrt{c-c\sec(e+fx)}\,\left(\log\left(1+e^{2}\right.\right.}{16f\left(1+e^{i(e+fx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] -1/16*(c^2*(1 + E^((2*I)*(e + f*x)))^3*(I + Cot[(e + f*x)/2])*(-1 - I*f*x +
 4*Cos[e + f*x] + Log[1 + E^((2*I)*(e + f*x))] + Cos[2*(e + f*x)]*((-I)*f*x
 + Log[1 + E^((2*I)*(e + f*x))]))*Sec[e + f*x]^4*Sqrt[a*(1 + Sec[e + f*x])]
*Sqrt[c - c*Sec[e + f*x]])/(E^((3*I)*(e + f*x))*(1 + E^(I*(e + f*x)))*f)
```

fricas [A] time = 0.57, size = 425, normalized size = 3.06

$$\left[-\frac{\left(3\,c^2\cos\left(fx+e\right)-c^2\right)\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)-\left(c^2\cos\left(fx+e\right)^2+c^2\cos\left(fx+e\right)\right)\sqrt{-ac}\,\text{lo}}{2\left(f\cos\left(fx+e\right)^2+f\cos\left(fx+e\right)\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [-1/2*((3*c^2*cos(f*x + e) - c^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*s
qrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) - (c^2*cos(f*x + e)^2 +
 c^2*cos(f*x + e))*sqrt(-a*c)*log(1/2*(a*c*cos(f*x + e)^4 - (cos(f*x + e)^3
 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c
*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + a*c)/cos(f*x + e)^2))/(f*co
s(f*x + e)^2 + f*cos(f*x + e)), -1/2*((3*c^2*cos(f*x + e) - c^2)*sqrt((a*co
s(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f
*x + e) - 2*(c^2*cos(f*x + e)^2 + c^2*cos(f*x + e))*sqrt(a*c)*arctan(sqrt(a
*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f
*x + e))*cos(f*x + e)*sin(f*x + e)/(a*c*cos(f*x + e)^2 + a*c)))/(f*cos(f*x
+ e)^2 + f*cos(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((c-c*sec(f*x+e))^(5/2)*(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
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-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Warning, assuming -2*a+a is positive. Hint: run assume to make assumptions
on a variableWarning, assuming -2*a+a is positive. Hint: run assume to make
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check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
```

```
 sign: (4*pi/x/2)>(-4*pi/x/2)Warning, integration of abs or sign assumes co
nstant sign by intervals (correct if the argument is real):Check [abs(t_nos
tep^3+t_nostep)]Warning, integration of abs or sign assumes constant sign b
y intervals (correct if the argument is real):Check [abs(t_nostep)]Sign err
or (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluation time: 3.88Limit: Max order reached
 or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.35, size = 185, normalized size = 1.33

$$\frac{\left(2\ln\left(\frac{2}{1+\cos(fx+e)}\right)\left(\cos^2(fx+e)\right)-2\ln\left(-\frac{-1+\cos(fx+e)+\sin(fx+e)}{\sin(fx+e)}\right)\left(\cos^2(fx+e)\right)-2\ln\left(-\frac{-\sin(fx+e)-1+\cos(fx+e}{\sin(fx+e)}\right.}{2f\sin(fx+e)\,(-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(5/2)*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(2*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2-2*ln(-(-1+cos(f*x+e)+sin(f*x+e))
/sin(f*x+e))*cos(f*x+e)^2-2*ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))*cos(
f*x+e)^2-5*cos(f*x+e)^2-4*cos(f*x+e)+1)*cos(f*x+e)*(c*(-1+cos(f*x+e))/cos(f
*x+e))^(5/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/(-1+cos(f*x+e))
^2
```

maxima [B] time = 1.04, size = 710, normalized size = 5.11

$$-\frac{\left(\left(fx+e\right)c^2\cos\left(4fx+4e\right)^2+4\left(fx+e\right)c^2\cos\left(2fx+2e\right)^2+\left(fx+e\right)c^2\sin\left(4fx+4e\right)^2+4\left(fx+e\right)c^2\sin\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*c^2*cos(4*f*x + 4*e)^2 + 4*(f*x + e)*c^2*cos(2*f*x + 2*e)^2 + (
f*x + e)*c^2*sin(4*f*x + 4*e)^2 + 4*(f*x + e)*c^2*sin(2*f*x + 2*e)^2 + 4*(f
*x + e)*c^2*cos(2*f*x + 2*e) + (f*x + e)*c^2 + 2*c^2*sin(2*f*x + 2*e) - (c^
2*cos(4*f*x + 4*e)^2 + 4*c^2*cos(2*f*x + 2*e)^2 + c^2*sin(4*f*x + 4*e)^2 +
4*c^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*c^2*sin(2*f*x + 2*e)^2 + 4*c^2*
cos(2*f*x + 2*e) + c^2 + 2*(2*c^2*cos(2*f*x + 2*e) + c^2)*cos(4*f*x + 4*e))
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) + 2*(2*(f*x + e)*c^2*cos(2
*f*x + 2*e) + (f*x + e)*c^2 + c^2*sin(2*f*x + 2*e))*cos(4*f*x + 4*e) + 4*(c
^2*sin(4*f*x + 4*e) + 2*c^2*sin(2*f*x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) + 4*(c^2*sin(4*f*x + 4*e) + 2*c^2*sin(2*f*x + 2*e))
*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(2*(f*x + e)*c^2*
sin(2*f*x + 2*e) - c^2*cos(2*f*x + 2*e))*sin(4*f*x + 4*e) - 4*(c^2*cos(4*f*
x + 4*e) + 2*c^2*cos(2*f*x + 2*e) + c^2)*sin(3/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) - 4*(c^2*cos(4*f*x + 4*e) + 2*c^2*cos(2*f*x + 2*e) + c^2
)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((2
*(2*cos(2*f*x + 2*e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x + 4*e)^2 + 4*cos(2*f
*x + 2*e)^2 + sin(4*f*x + 4*e)^2 + 4*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*
sin(2*f*x + 2*e)^2 + 4*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(5/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/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((c-c*sec(f*x+e))**(5/2)*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.88 $\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}\,dx$

Optimal. Leaf size=93

$$\frac{ac^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{ac\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] a*c^2*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)-a*c*(c-c*sec(f*x+e))^(1/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3906, 3905, 3475}

$$\frac{ac^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{ac\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (a*c^2*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) - (a*c*Sqrt[c - c*Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a +
 a*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3906

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_.), x_Symbol] :> Simp[(2*a*c*Cot[e + f*x]*(c + d*Csc[e + f*x]
)^(n - 1))/(f*(2*n - 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[c, Int[Sqrt[a
+ b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && GtQ[n, 1/2]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}\,dx=-\frac{ac\sqrt{c-c\sec(e+fx)}\,\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+c\int\sqrt{a+a\sec(e+fx)}$$

$$=-\frac{ac\sqrt{c-c\sec(e+fx)}\,\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}-\frac{\left(ac^2\tan(e+fx)\right)\int \text{ta}}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c}}$$

$$=\frac{ac^2\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}-\frac{ac\sqrt{c-c\sec(e+}}{f\sqrt{a+a\sec}}$$

Mathematica [C] time = 1.24, size = 99, normalized size = 1.06

$$\frac{ic\left(\cot\left(\frac{1}{2}(e+fx)\right)+i\right)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}\left(\left(fx+i\log\left(1+e^{2i(e+fx)}\right)\right)\cos(e+fx)+i\right)}{f\left(1+e^{i(e+fx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (I*c*(I + Cot[(e + f*x)/2])*(I + Cos[e + f*x]*(f*x + I*Log[1 + E^((2*I)*(e
+ f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])/((1 + E^(I*
(e + f*x)))*f)
```

fricas [A] time = 0.57, size = 350, normalized size = 3.76

$$\left[-\frac{2c\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)-\sqrt{-ac}\left(c\cos\left(fx+e\right)+c\right)\log\left(\frac{ac\cos\left(fx+e\right)^{4}-\left(\cos\left(fx+e\right)^{3}+\cos\left(fx+e\right)\right)\sqrt{\cdots}}{2\,c\cdots}\right)}{2\left(f\cos\left(fx+e\right)+f\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [-1/2*(2*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c
)/cos(f*x + e))*sin(f*x + e) - sqrt(-a*c)*(c*cos(f*x + e) + c)*log(1/2*(a*c
*cos(f*x + e)^4 - (cos(f*x + e)^3 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*
x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x +
 e) + a*c)/cos(f*x + e)^2))/(f*cos(f*x + e) + f), -(c*sqrt((a*cos(f*x + e)
+ a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) - s
qrt(a*c)*(c*cos(f*x + e) + c)*arctan(sqrt(a*c)*sqrt((a*cos(f*x + e) + a)/co
s(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*cos(f*x + e)*sin(f*x +
e)/(a*c*cos(f*x + e)^2 + a*c)))/(f*cos(f*x + e) + f)]
```

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((c-c*sec(f*x+e))^(3/2)*(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2
*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Warning, assuming -2*a+a is positive. Hint: run assume to make assumptions
on a variableWarning, assuming -2*a+a is positive. Hint: run assume to make
 assumptions on a variableWarning, assuming -2*a+a is positive. Hint: run a
```

```
ssume to make assumptions on a variableWarning, assuming -2*a+a is positive
. Hint: run assume to make assumptions on a variableUnable to check sign: (
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(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2
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tep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_n
ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4
*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Un
able to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sig
n: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep
/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nost
ep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to ch
eck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/x
/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Una
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n: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
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umes constant sign by intervals (correct if the argument is real):Check [ab
s(t_nostep)]Sign error (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluation time: 3.45Limi
t: Max order reached or unable to make series expansion Error: Bad Argument
 Value
```

maple [A] time = 2.31, size = 165, normalized size = 1.77

$$-\frac{\left(\cos\left(fx+e\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+\cos\left(fx+e\right)\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+\right.}\right.\right.}{f\sin\left(fx+e\right)\left(-1+\cos\left(fx+e\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(3/2)*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(cos(f*x+e)*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+cos(f*x+e)*ln(-
(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))-cos(f*x+e)*ln(2/(1+cos(f*x+e)))+cos(
f*x+e)+1)*cos(f*x+e)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(3/2)*(a*(1+cos(f*x+e))
/cos(f*x+e))^(1/2)/sin(f*x+e)/(-1+cos(f*x+e))
```

maxima [B] time = 0.77, size = 243, normalized size = 2.61

$$-\frac{\left(\left(fx+e\right)c\cos\left(2\,fx+2\,e\right)^{2}+\left(fx+e\right)c\sin\left(2\,fx+2\,e\right)^{2}+2\left(fx+e\right)c\cos\left(2\,fx+2\,e\right)+2\,c\cos\left(\frac{1}{2}\arctan\left(\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*c*cos(2*f*x + 2*e)^2 + (f*x + e)*c*sin(2*f*x + 2*e)^2 + 2*(f*x
+ e)*c*cos(2*f*x + 2*e) + 2*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))*sin(2*f*x + 2*e) + (f*x + e)*c - (c*cos(2*f*x + 2*e)^2 + c*sin(2*f*
x + 2*e)^2 + 2*c*cos(2*f*x + 2*e) + c)*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e) + 1) - 2*(c*cos(2*f*x + 2*e) + c)*sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)
^2 + 2*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(3/2), x)
```

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

$$\int \sqrt{a\left(\sec\left(e+fx\right)+1\right)}\,\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(3/2)*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*(-c*(sec(e + f*x) - 1))**(3/2), x)
```

3.89 $\int \sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=48

$$\frac{ac\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] a*c*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)
```

Rubi [A] time = 0.08, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3905, 3475}

$$\frac{ac\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a*c*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rubi steps

$$\begin{aligned}\int \sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}\,dx &= -\frac{(ac\tan(e+fx))\int\tan(e+fx)\,dx}{\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= \frac{ac\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.58, size = 102, normalized size = 2.12

$$\frac{ie^{\frac{1}{2}i(e+fx)}\left(fx+i\log\left(1+e^{2i(e+fx)}\right)\right)\cos(e+fx)\csc\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}}{f\left(1+e^{i(e+fx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (I*E^((I/2)*(e + f*x))*Cos[e + f*x]*Csc[(e + f*x)/2]*(f*x + I*Log[1 + E^((2
*I)*(e + f*x))])*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])/((1 +
 E^(I*(e + f*x)))*f)
```

fricas [B]   time = 0.57, size = 200, normalized size = 4.17

$$\left[\frac{\sqrt{-ac}\log\left(\frac{ac\cos\left(fx+e\right)^4-\left(\cos\left(fx+e\right)^3+\cos\left(fx+e\right)\right)\sqrt{-ac}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)+ac}{2\cos\left(fx+e\right)^2}\right)}{2f}, \frac{\sqrt{ac}\arctan\left(\frac{\sqrt{ac}\sqrt{\frac{a\cos\left(fx\right.}{\cos\left(f\right.}}}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/2*sqrt(-a*c)*log(1/2*(a*c*cos(f*x + e)^4 - (cos(f*x + e)^3 + cos(f*x + e
))*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e)
- c)/cos(f*x + e))*sin(f*x + e) + a*c)/cos(f*x + e)^2)/f, sqrt(a*c)*arctan(
sqrt(a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)
/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(a*c*cos(f*x + e)^2 + a*c))/f]
```

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((c-c*sec(f*x+e))^(1/2)*(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
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the argument is real):Check [abs(t_nostep^3+t_nostep)]Warning, integration
of abs or sign assumes constant sign by intervals (correct if the argument
is real):Check [abs(t_nostep)]Sign error (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluat
ion time: 3.05Limit: Max order reached or unable to make series expansion E
rror: Bad Argument Value
```

maple [B] time = 2.40, size = 128, normalized size = 2.67

$$-\frac{\left(\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\right)\cos\left(fx+e\right)\sqrt{\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}}{f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(1/2)*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+ln(-(-sin(f*x+e)-1+cos(f*x
+e))/sin(f*x+e))-ln(2/(1+cos(f*x+e))))*cos(f*x+e)*(c*(-1+cos(f*x+e))/cos(f*
x+e))^(1/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)
```

maxima [A] time = 0.81, size = 39, normalized size = 0.81

$$-\frac{\left(fx+e-\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)+1\right)\right)\sqrt{a}\,\sqrt{c}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -(f*x + e - arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sqrt(a)*sqrt(c
)/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(1/2), x)
```

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

$$\int \sqrt{a\left(\sec\left(e+fx\right)+1\right)}\,\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(1/2)*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*sqrt(-c*(sec(e + f*x) - 1)), x)
```

3.90 $\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c-c\sec(e+fx)}}\,dx$

Optimal. Leaf size=51

$$\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

```
[Out] a*ln(1-cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)
```

Rubi [A] time = 0.09, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = $\{3911, 31\}$

$$\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]])
```

Rule 31

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

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c-c\sec(e+fx)}}\,dx &= \frac{(ac\tan(e+fx))\operatorname{Subst}\left(\int \frac{1}{-c+cx}\,dx, x, \cos(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\
&= \frac{a\log(1-\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}
\end{aligned}$$

Mathematica [C] time = 0.98, size = 86, normalized size = 1.69

$$-\frac{\left(-1+e^{i(e+fx)}\right)\left(fx+2i\log\left(1-e^{i(e+fx)}\right)\right)\sqrt{a(\sec(e+fx)+1)}}{f\left(1+e^{i(e+fx)}\right)\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] -(((-1 + E^(I*(e + f*x)))*(f*x + (2*I)*Log[1 - E^(I*(e + f*x))])*Sqrt[a*(1
+ Sec[e + f*x]])])/((1 + E^(I*(e + f*x)))*f*Sqrt[c - c*Sec[e + f*x]]))
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sec\left(fx+e\right)+a}\sqrt{-c\sec\left(fx+e\right)+c}}{c\sec\left(fx+e\right)-c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral(-sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(c*sec(f*x + e
) - c), 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+a*sec(f*x+e))^(1/2)/(c-c*sec(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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abs(t_nostep),abs(t_nostep^2-1)]Warning, integration of abs or sign assumes
 constant sign by intervals (correct if the argument is real):Check [abs(t_
nostep)]Sign error %%%{-a,2%%%}Sign error (%%%{-a,0%%%}+%%%{-a,2%%%})Evalua
tion time: 2.14Limit: Max order reached or unable to make series expansion
Error: Bad Argument Value
```

maple [B] time = 2.12, size = 100, normalized size = 1.96

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(2\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\right)\sqrt{\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)}{f\sin\left(fx+e\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(2*ln(-(-1+cos(f*x+e))/sin(f*x+e))
-ln(2/(1+cos(f*x+e))))*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)*cos(f*x+e)/sin(
f*x+e)/c
```

maxima [A] time = 0.59, size = 65, normalized size = 1.27

$$\frac{\frac{2\sqrt{-a}\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{\sqrt{c}}-\frac{\sqrt{-a}\log\left(\frac{\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}+1\right)}{\sqrt{c}}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] (2*sqrt(-a)*log(sin(f*x + e)/(cos(f*x + e) + 1))/sqrt(c) - sqrt(-a)*log(sin
(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)/sqrt(c))/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}{\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/sqrt(-c*(sec(e + f*x) - 1)), x)
```

3.91 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{cf\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}$$

```
[Out] -a*tan(f*x+e)/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a*ln(1-cos(f*
x+e))*tan(f*x+e)/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3907, 3911, 31}

$$\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{cf\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] -((a*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2)))
 + (a*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c*f*Sqrt[a + a*Sec[e + f*x]]*Sqr
t[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{3/2}}\,dx = -\frac{a\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c-c\sec(e+fx)}}\,dx}{c}$$

$$= -\frac{a\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{(a\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{-c+cx}\,dx,\right.}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\,\text{s}}}$$

$$= -\frac{a\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{a\log(1-\cos(e+fx))\tan(e+}{cf\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e}}$$

Mathematica [C] time = 1.04, size = 107, normalized size = 1.11

$$\frac{\tan\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{a(\sec(e+fx)+1)}\left(-2\log\left(1-e^{i(e+fx)}\right)+\left(2\log\left(1-e^{i(e+fx)}\right)-ifx\right)\cos(e+fx)+\right.}{f(c-c\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] ((-1 + I*f*x - 2*Log[1 - E^(I*(e + f*x))] + Cos[e + f*x]*((-I)*f*x + 2*Log[
1 - E^(I*(e + f*x))]))*Sec[e + f*x]*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x
)/2])/(f*(c - c*Sec[e + f*x])^(3/2))
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\sqrt{-c\sec\left(fx+e\right)+c}}{c^2\sec\left(fx+e\right)^2-2\,c^2\sec\left(fx+e\right)+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(c^2*sec(f*x +
e)^2 - 2*c^2*sec(f*x + e) + c^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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [A] time = 2.55, size = 164, normalized size = 1.71

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(4\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\cos\left(fx+e\right)-2\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-\cos\left(fx+e\right)-4\ln\left(-\right.\right.}{2f\cos\left(fx+e\right)\left(\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/2/f*(-1+cos(f*x+e))*(4*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)-2*cos(
f*x+e)*ln(2/(1+cos(f*x+e)))-cos(f*x+e)-4*ln(-(-1+cos(f*x+e))/sin(f*x+e))+2*
ln(2/(1+cos(f*x+e)))-1)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/cos(f*x+e)/(c*(
-1+cos(f*x+e))/cos(f*x+e))^(3/2)/sin(f*x+e)
```

maxima [B] time = 1.03, size = 399, normalized size = 4.16

$$-\frac{\left(\left(fx+e\right)\cos\left(2\,fx+2\,e\right)^2+4\left(fx+e\right)\cos\left(fx+e\right)^2+\left(fx+e\right)\sin\left(2\,fx+2\,e\right)^2+4\left(fx+e\right)\sin\left(fx+e\right)^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*cos(2*f*x + 2*e)^2 + 4*(f*x + e)*cos(f*x + e)^2 + (f*x + e)*sin
(2*f*x + 2*e)^2 + 4*(f*x + e)*sin(f*x + e)^2 + f*x + 2*(2*(2*cos(f*x + e) -
 1)*cos(2*f*x + 2*e) - cos(2*f*x + 2*e)^2 - 4*cos(f*x + e)^2 - sin(2*f*x +
2*e)^2 + 4*sin(2*f*x + 2*e)*sin(f*x + e) - 4*sin(f*x + e)^2 + 4*cos(f*x + e
) - 1)*arctan2(sin(f*x + e), cos(f*x + e) - 1) + 2*(f*x - 2*(f*x + e)*cos(f
*x + e) + e + sin(f*x + e))*cos(2*f*x + 2*e) - 4*(f*x + e)*cos(f*x + e) - 2
*(2*(f*x + e)*sin(f*x + e) + cos(f*x + e))*sin(2*f*x + 2*e) + e + 2*sin(f*x
 + e))*sqrt(a)*sqrt(c)/((c^2*cos(2*f*x + 2*e)^2 + 4*c^2*cos(f*x + e)^2 + c^
2*sin(2*f*x + 2*e)^2 - 4*c^2*sin(2*f*x + 2*e)*sin(f*x + e) + 4*c^2*sin(f*x
+ e)^2 - 4*c^2*cos(f*x + e) + c^2 - 2*(2*c^2*cos(f*x + e) - c^2)*cos(2*f*x
+ 2*e))*f)
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\sqrt{a \left(\sec{\left(e + f x \right)} + 1\right)}}{\left(- c \left(\sec{\left(e + f x \right)} - 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/(-c*(sec(e + f*x) - 1))**(3/2), x)
```

3.92 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=142

$$\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{c^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a\tan(e+fx)}{cf\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a\tan(e+}{2f\sqrt{a\sec(e+fx)+a}\,(c}$$

```
[Out] -1/2*a*tan(f*x+e)/f/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2)-a*tan(f*x
+e)/c/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a*ln(1-cos(f*x+e))*ta
n(f*x+e)/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {3907, 3911, 31}

$$\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{c^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a\tan(e+fx)}{cf\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a\tan(e+}{2f\sqrt{a\sec(e+fx)+a}\,(c}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] -(a*Tan[e + f*x])/(2*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5/2))
 - (a*Tan[e + f*x])/(c*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2
)) + (a*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^2*f*Sqrt[a + a*Sec[e + f*x]]
*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{5/2}}\,dx = -\frac{a\tan(e+fx)}{2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} + \frac{\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{3/2}}\,dx}{c}$$

$$= -\frac{a\tan(e+fx)}{2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} - \frac{a\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e$$

$$= -\frac{a\tan(e+fx)}{2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} - \frac{a\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e$$

$$= -\frac{a\tan(e+fx)}{2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} - \frac{a\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e$$

Mathematica [C] time = 1.25, size = 152, normalized size = 1.07

$$\frac{\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\,\left(6\log\left(1-e^{i(e+fx)}\right)+\left(-8\log\left(1-e^{i(e+fx)}\right)+4ifx-4\right)\cos(e+fx)+\left(21\right.}{2c^2f(\cos(e+fx)-1)^2\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((3 - (3*I)*f*x + Cos[e + f*x]*(-4 + (4*I)*f*x - 8*Log[1 - E^(I*(e + f*x))]
) + 6*Log[1 - E^(I*(e + f*x))] + Cos[2*(e + f*x)]*((-I)*f*x + 2*Log[1 - E^(
I*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(2*c^2*f*(-1 +
 Cos[e + f*x])^2*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{c^3\sec\left(fx+e\right)^3-3\,c^3\sec\left(fx+e\right)^2+3\,c^3\sec\left(fx+e\right)-c^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral(-sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(c^3*sec(f*x +
 e)^3 - 3*c^3*sec(f*x + e)^2 + 3*c^3*sec(f*x + e) - c^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((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(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)Warning, integrati
on of abs or sign assumes constant sign by intervals (correct if the argume
nt is real):Check [abs(cos(f*x+exp(1)))]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
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nable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)
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p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
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t_nostep/2)Warning, assuming -2*a+a is positive. Hint: run assume to make a
ssumptions on a variableWarning, assuming -2*a+a is positive. Hint: run ass
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Hint: run assume to make assumptions on a variableWarning, assuming -2*a+a
is positive. Hint: run assume to make assumptions on a variableUnable to ch
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nable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check si
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*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
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*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
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check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep),abs(t_nostep^2-1)]War
ning, integration of abs or sign assumes constant sign by intervals (correc
t if the argument is real):Check [abs(t_nostep)]Sign error %%%{-2*a,2%%%}Si
gn error (%%%{-a,0%%%}+%%%{-a,2%%%})Evaluation time: 4.57Limit: Max order r
eached or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.68, size = 226, normalized size = 1.59

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(16\left(\cos^{2}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-8\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)-32\ln\left(-\frac{-1+\cos(\ldots}{\sin(fx\ldots}\right.\right.}{8f\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/8/f*(-1+cos(f*x+e))*(16*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-8*l
n(2/(1+cos(f*x+e)))*cos(f*x+e)^2-32*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x
+e)-7*cos(f*x+e)^2+16*cos(f*x+e)*ln(2/(1+cos(f*x+e)))+16*ln(-(-1+cos(f*x+e)
)/sin(f*x+e))-2*cos(f*x+e)-8*ln(2/(1+cos(f*x+e)))+5)*(a*(1+cos(f*x+e))/cos(
f*x+e))^(1/2)/sin(f*x+e)/cos(f*x+e)^2/(c*(-1+cos(f*x+e))/cos(f*x+e))^(5/2)
```

maxima [B] time = 1.10, size = 1173, normalized size = 8.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*cos(4*f*x + 4*e)^2 + 16*(f*x + e)*cos(3*f*x + 3*e)^2 + 36*(f*x
+ e)*cos(2*f*x + 2*e)^2 + 16*(f*x + e)*cos(f*x + e)^2 + (f*x + e)*sin(4*f*x
 + 4*e)^2 + 16*(f*x + e)*sin(3*f*x + 3*e)^2 + 36*(f*x + e)*sin(2*f*x + 2*e)
^2 + 16*(f*x + e)*sin(f*x + e)^2 + f*x + 2*(2*(4*cos(3*f*x + 3*e) - 6*cos(2
*f*x + 2*e) + 4*cos(f*x + e) - 1)*cos(4*f*x + 4*e) - cos(4*f*x + 4*e)^2 + 8
*(6*cos(2*f*x + 2*e) - 4*cos(f*x + e) + 1)*cos(3*f*x + 3*e) - 16*cos(3*f*x
+ 3*e)^2 + 12*(4*cos(f*x + e) - 1)*cos(2*f*x + 2*e) - 36*cos(2*f*x + 2*e)^2
 - 16*cos(f*x + e)^2 + 4*(2*sin(3*f*x + 3*e) - 3*sin(2*f*x + 2*e) + 2*sin(f
*x + e))*sin(4*f*x + 4*e) - sin(4*f*x + 4*e)^2 + 16*(3*sin(2*f*x + 2*e) - 2
*sin(f*x + e))*sin(3*f*x + 3*e) - 16*sin(3*f*x + 3*e)^2 - 36*sin(2*f*x + 2*
e)^2 + 48*sin(2*f*x + 2*e)*sin(f*x + e) - 16*sin(f*x + e)^2 + 8*cos(f*x + e
) - 1)*arctan2(sin(f*x + e), cos(f*x + e) - 1) + 2*(f*x - 4*(f*x + e)*cos(3
*f*x + 3*e) + 6*(f*x + e)*cos(2*f*x + 2*e) - 4*(f*x + e)*cos(f*x + e) + e +
 2*sin(3*f*x + 3*e) - 3*sin(2*f*x + 2*e) + 2*sin(f*x + e))*cos(4*f*x + 4*e)
 - 8*(f*x + 6*(f*x + e)*cos(2*f*x + 2*e) - 4*(f*x + e)*cos(f*x + e) + e)*co
s(3*f*x + 3*e) + 12*(f*x - 4*(f*x + e)*cos(f*x + e) + e)*cos(2*f*x + 2*e) -
 8*(f*x + e)*cos(f*x + e) - 2*(4*(f*x + e)*sin(3*f*x + 3*e) - 6*(f*x + e)*s
in(2*f*x + 2*e) + 4*(f*x + e)*sin(f*x + e) + 2*cos(3*f*x + 3*e) - 3*cos(2*f
*x + 2*e) + 2*cos(f*x + e))*sin(4*f*x + 4*e) - 4*(12*(f*x + e)*sin(2*f*x +
2*e) - 8*(f*x + e)*sin(f*x + e) - 1)*sin(3*f*x + 3*e) - 6*(8*(f*x + e)*sin(
f*x + e) + 1)*sin(2*f*x + 2*e) + e + 4*sin(f*x + e))*sqrt(a)*sqrt(c)/((c^3*
cos(4*f*x + 4*e)^2 + 16*c^3*cos(3*f*x + 3*e)^2 + 36*c^3*cos(2*f*x + 2*e)^2
+ 16*c^3*cos(f*x + e)^2 + c^3*sin(4*f*x + 4*e)^2 + 16*c^3*sin(3*f*x + 3*e)^
2 + 36*c^3*sin(2*f*x + 2*e)^2 - 48*c^3*sin(2*f*x + 2*e)*sin(f*x + e) + 16*c
^3*sin(f*x + e)^2 - 8*c^3*cos(f*x + e) + c^3 - 2*(4*c^3*cos(3*f*x + 3*e) -
6*c^3*cos(2*f*x + 2*e) + 4*c^3*cos(f*x + e) - c^3)*cos(4*f*x + 4*e) - 8*(6*
c^3*cos(2*f*x + 2*e) - 4*c^3*cos(f*x + e) + c^3)*cos(3*f*x + 3*e) - 12*(4*c
^3*cos(f*x + e) - c^3)*cos(2*f*x + 2*e) - 4*(2*c^3*sin(3*f*x + 3*e) - 3*c^3
*sin(2*f*x + 2*e) + 2*c^3*sin(f*x + e))*sin(4*f*x + 4*e) - 16*(3*c^3*sin(2*
f*x + 2*e) - 2*c^3*sin(f*x + e))*sin(3*f*x + 3*e))*f)
```

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

$$\int \frac{\sqrt{a + \frac{a}{\cos(e+f\,x)}}}{\left(c - \frac{c}{\cos(e+f\,x)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^(5/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}{\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e))**(5/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/(-c*(sec(e + f*x) - 1))**(5/2), x)
```

3.93 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=188

$$\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{c^3f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a\tan(e+fx)}{c^2f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a\tan(e+}{2cf\sqrt{a\sec(e+fx)+a}\,(}$$

```
[Out] -1/3*a*tan(f*x+e)/f/(c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(1/2)-1/2*a*tan
(f*x+e)/c/f/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2)-a*tan(f*x+e)/c^2/
f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a*ln(1-cos(f*x+e))*tan(f*x+
e)/c^3/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {3907, 3911, 31}

$$-\frac{a\tan(e+fx)}{c^2f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}+\frac{a\tan(e+fx)\log(1-\cos(e+fx))}{c^3f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a\tan(e}{2cf\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] -(a*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(7/2))
 - (a*Tan[e + f*x])/(2*c*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5
/2)) - (a*Tan[e + f*x])/(c^2*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x]
)^(3/2)) + (a*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^3*f*Sqrt[a + a*Sec[e +
 f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{7/2}}\,dx = -\frac{a\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} + \frac{\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{5/2}}\,dx}{c}$$

$$= -\frac{a\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{a\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{a\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{a\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

Mathematica [C] time = 1.94, size = 198, normalized size = 1.05

$$\frac{\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(-60\log\left(1-e^{i(e+fx)}\right)-3ifx\cos(3(e+fx))+18i\left(2i\log\left(1-e^{i(e+fx)}\right)+\right.\right.}{12c^3f(\cos(e+}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] ((-40 + (30*I)*f*x - (3*I)*f*x*Cos[3*(e + f*x)] + (18*I)*Cos[2*(e + f*x)]*(
I + f*x + (2*I)*Log[1 - E^(I*(e + f*x))]) - 60*Log[1 - E^(I*(e + f*x))] + 6
*Cos[3*(e + f*x)]*Log[1 - E^(I*(e + f*x))] + 9*Cos[e + f*x]*(6 - (5*I)*f*x
+ 10*Log[1 - E^(I*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2]
)/(12*c^3*f*(-1 + Cos[e + f*x])^3*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{c^4\sec\left(fx+e\right)^4-4\,c^4\sec\left(fx+e\right)^3+6\,c^4\sec\left(fx+e\right)^2-4\,c^4\sec\left(fx+e\right)+c^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(c^4*sec(f*x +
e)^4 - 4*c^4*sec(f*x + e)^3 + 6*c^4*sec(f*x + e)^2 - 4*c^4*sec(f*x + e) + c
^4), 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+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [A] time = 2.18, size = 288, normalized size = 1.53

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(12\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^{3}\left(fx+e\right)\right)-6\left(\cos^{3}\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-36\left(\cos^{2}\left(fx+\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(7/2),x)
```

```
[Out] -1/6/f*(-1+cos(f*x+e))*(12*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)^3-6*c
os(f*x+e)^3*ln(2/(1+cos(f*x+e)))-36*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*
x+e))-7*cos(f*x+e)^3+18*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+36*ln(-(-1+cos(f*
x+e))/sin(f*x+e))*cos(f*x+e)+3*cos(f*x+e)^2-18*cos(f*x+e)*ln(2/(1+cos(f*x+e
)))-12*ln(-(-1+cos(f*x+e))/sin(f*x+e))+6*cos(f*x+e)+6*ln(2/(1+cos(f*x+e)))-
4)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/cos(f*x+e)^3/(c*(-1+cos(f
*x+e))/cos(f*x+e))^(7/2)
```

maxima [B] time = 4.63, size = 2444, normalized size = 13.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="maxim
a")
```

```
[Out] -1/3*(3*(f*x + e)*cos(6*f*x + 6*e)^2 + 108*(f*x + e)*cos(5*f*x + 5*e)^2 + 6
75*(f*x + e)*cos(4*f*x + 4*e)^2 + 1200*(f*x + e)*cos(3*f*x + 3*e)^2 + 675*(
f*x + e)*cos(2*f*x + 2*e)^2 + 108*(f*x + e)*cos(f*x + e)^2 + 3*(f*x + e)*si
n(6*f*x + 6*e)^2 + 108*(f*x + e)*sin(5*f*x + 5*e)^2 + 675*(f*x + e)*sin(4*f
*x + 4*e)^2 + 1200*(f*x + e)*sin(3*f*x + 3*e)^2 + 675*(f*x + e)*sin(2*f*x +
 2*e)^2 + 108*(f*x + e)*sin(f*x + e)^2 + 3*f*x + 6*(2*(6*cos(5*f*x + 5*e) -
 15*cos(4*f*x + 4*e) + 20*cos(3*f*x + 3*e) - 15*cos(2*f*x + 2*e) + 6*cos(f*
x + e) - 1)*cos(6*f*x + 6*e) - cos(6*f*x + 6*e)^2 + 12*(15*cos(4*f*x + 4*e)
 - 20*cos(3*f*x + 3*e) + 15*cos(2*f*x + 2*e) - 6*cos(f*x + e) + 1)*cos(5*f*
x + 5*e) - 36*cos(5*f*x + 5*e)^2 + 30*(20*cos(3*f*x + 3*e) - 15*cos(2*f*x +
 2*e) + 6*cos(f*x + e) - 1)*cos(4*f*x + 4*e) - 225*cos(4*f*x + 4*e)^2 + 40*
(15*cos(2*f*x + 2*e) - 6*cos(f*x + e) + 1)*cos(3*f*x + 3*e) - 400*cos(3*f*x
 + 3*e)^2 + 30*(6*cos(f*x + e) - 1)*cos(2*f*x + 2*e) - 225*cos(2*f*x + 2*e)
^2 - 36*cos(f*x + e)^2 + 2*(6*sin(5*f*x + 5*e) - 15*sin(4*f*x + 4*e) + 20*s
in(3*f*x + 3*e) - 15*sin(2*f*x + 2*e) + 6*sin(f*x + e))*sin(6*f*x + 6*e) -
sin(6*f*x + 6*e)^2 + 12*(15*sin(4*f*x + 4*e) - 20*sin(3*f*x + 3*e) + 15*sin
(2*f*x + 2*e) - 6*sin(f*x + e))*sin(5*f*x + 5*e) - 36*sin(5*f*x + 5*e)^2 +
30*(20*sin(3*f*x + 3*e) - 15*sin(2*f*x + 2*e) + 6*sin(f*x + e))*sin(4*f*x +
 4*e) - 225*sin(4*f*x + 4*e)^2 + 120*(5*sin(2*f*x + 2*e) - 2*sin(f*x + e))*
sin(3*f*x + 3*e) - 400*sin(3*f*x + 3*e)^2 - 225*sin(2*f*x + 2*e)^2 + 180*si
n(2*f*x + 2*e)*sin(f*x + e) - 36*sin(f*x + e)^2 + 12*cos(f*x + e) - 1)*arct
an2(sin(f*x + e), cos(f*x + e) - 1) + 2*(3*f*x - 18*(f*x + e)*cos(5*f*x + 5
*e) + 45*(f*x + e)*cos(4*f*x + 4*e) - 60*(f*x + e)*cos(3*f*x + 3*e) + 45*(f
*x + e)*cos(2*f*x + 2*e) - 18*(f*x + e)*cos(f*x + e) + 3*e + 9*sin(5*f*x +
5*e) - 27*sin(4*f*x + 4*e) + 40*sin(3*f*x + 3*e) - 27*sin(2*f*x + 2*e) + 9*
sin(f*x + e))*cos(6*f*x + 6*e) - 6*(6*f*x + 90*(f*x + e)*cos(4*f*x + 4*e) -
 120*(f*x + e)*cos(3*f*x + 3*e) + 90*(f*x + e)*cos(2*f*x + 2*e) - 36*(f*x +
 e)*cos(f*x + e) + 6*e - 9*sin(4*f*x + 4*e) + 20*sin(3*f*x + 3*e) - 9*sin(2
*f*x + 2*e))*cos(5*f*x + 5*e) + 6*(15*f*x - 300*(f*x + e)*cos(3*f*x + 3*e)
+ 225*(f*x + e)*cos(2*f*x + 2*e) - 90*(f*x + e)*cos(f*x + e) + 15*e + 20*si
n(3*f*x + 3*e) - 9*sin(f*x + e))*cos(4*f*x + 4*e) - 120*(f*x + 15*(f*x + e)
```

```
*cos(2*f*x + 2*e) - 6*(f*x + e)*cos(f*x + e) + e + sin(2*f*x + 2*e) - sin(f
*x + e))*cos(3*f*x + 3*e) + 18*(5*f*x - 30*(f*x + e)*cos(f*x + e) + 5*e - 3
*sin(f*x + e))*cos(2*f*x + 2*e) - 36*(f*x + e)*cos(f*x + e) - 2*(18*(f*x +
e)*sin(5*f*x + 5*e) - 45*(f*x + e)*sin(4*f*x + 4*e) + 60*(f*x + e)*sin(3*f*
x + 3*e) - 45*(f*x + e)*sin(2*f*x + 2*e) + 18*(f*x + e)*sin(f*x + e) + 9*co
s(5*f*x + 5*e) - 27*cos(4*f*x + 4*e) + 40*cos(3*f*x + 3*e) - 27*cos(2*f*x +
 2*e) + 9*cos(f*x + e))*sin(6*f*x + 6*e) - 6*(90*(f*x + e)*sin(4*f*x + 4*e)
 - 120*(f*x + e)*sin(3*f*x + 3*e) + 90*(f*x + e)*sin(2*f*x + 2*e) - 36*(f*x
 + e)*sin(f*x + e) + 9*cos(4*f*x + 4*e) - 20*cos(3*f*x + 3*e) + 9*cos(2*f*x
 + 2*e) - 3)*sin(5*f*x + 5*e) - 6*(300*(f*x + e)*sin(3*f*x + 3*e) - 225*(f*
x + e)*sin(2*f*x + 2*e) + 90*(f*x + e)*sin(f*x + e) + 20*cos(3*f*x + 3*e) -
 9*cos(f*x + e) + 9)*sin(4*f*x + 4*e) - 40*(45*(f*x + e)*sin(2*f*x + 2*e) -
 18*(f*x + e)*sin(f*x + e) - 3*cos(2*f*x + 2*e) + 3*cos(f*x + e) - 2)*sin(3
*f*x + 3*e) - 54*(10*(f*x + e)*sin(f*x + e) - cos(f*x + e) + 1)*sin(2*f*x +
 2*e) + 3*e + 18*sin(f*x + e))*sqrt(a)*sqrt(c)/((c^4*cos(6*f*x + 6*e)^2 + 3
6*c^4*cos(5*f*x + 5*e)^2 + 225*c^4*cos(4*f*x + 4*e)^2 + 400*c^4*cos(3*f*x +
 3*e)^2 + 225*c^4*cos(2*f*x + 2*e)^2 + 36*c^4*cos(f*x + e)^2 + c^4*sin(6*f*
x + 6*e)^2 + 36*c^4*sin(5*f*x + 5*e)^2 + 225*c^4*sin(4*f*x + 4*e)^2 + 400*c
^4*sin(3*f*x + 3*e)^2 + 225*c^4*sin(2*f*x + 2*e)^2 - 180*c^4*sin(2*f*x + 2*
e)*sin(f*x + e) + 36*c^4*sin(f*x + e)^2 - 12*c^4*cos(f*x + e) + c^4 - 2*(6*
c^4*cos(5*f*x + 5*e) - 15*c^4*cos(4*f*x + 4*e) + 20*c^4*cos(3*f*x + 3*e) -
15*c^4*cos(2*f*x + 2*e) + 6*c^4*cos(f*x + e) - c^4)*cos(6*f*x + 6*e) - 12*(
15*c^4*cos(4*f*x + 4*e) - 20*c^4*cos(3*f*x + 3*e) + 15*c^4*cos(2*f*x + 2*e)
 - 6*c^4*cos(f*x + e) + c^4)*cos(5*f*x + 5*e) - 30*(20*c^4*cos(3*f*x + 3*e)
 - 15*c^4*cos(2*f*x + 2*e) + 6*c^4*cos(f*x + e) - c^4)*cos(4*f*x + 4*e) - 4
0*(15*c^4*cos(2*f*x + 2*e) - 6*c^4*cos(f*x + e) + c^4)*cos(3*f*x + 3*e) - 3
0*(6*c^4*cos(f*x + e) - c^4)*cos(2*f*x + 2*e) - 2*(6*c^4*sin(5*f*x + 5*e) -
 15*c^4*sin(4*f*x + 4*e) + 20*c^4*sin(3*f*x + 3*e) - 15*c^4*sin(2*f*x + 2*e
) + 6*c^4*sin(f*x + e))*sin(6*f*x + 6*e) - 12*(15*c^4*sin(4*f*x + 4*e) - 20
*c^4*sin(3*f*x + 3*e) + 15*c^4*sin(2*f*x + 2*e) - 6*c^4*sin(f*x + e))*sin(5
*f*x + 5*e) - 30*(20*c^4*sin(3*f*x + 3*e) - 15*c^4*sin(2*f*x + 2*e) + 6*c^4
*sin(f*x + e))*sin(4*f*x + 4*e) - 120*(5*c^4*sin(2*f*x + 2*e) - 2*c^4*sin(f
*x + e))*sin(3*f*x + 3*e))*f)
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c - c/cos(e + f*x))^(7/2),x)
[Out] int((a + a/cos(e + f*x))^(1/2)/(c - c/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((a+a*sec(f*x+e))**(1/2)/(c-c*sec(f*x+e))**(7/2),x)
[Out] Timed out
```

3.94 $\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^{5/2}\,dx$

Optimal. Leaf size=190

$$\frac{a^2c^3\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a^2c^2\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}}-\frac{a^2c\tan(e+fx)(c-c\sec(e+fx))}{2f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] -1/2*a^2*c*(c-c*sec(f*x+e))^(3/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+1/3*a
^2*(c-c*sec(f*x+e))^(5/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+a^2*c^3*ln(co
s(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-a^2*c^
2*(c-c*sec(f*x+e))^(1/2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.36, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3909, 3906, 3905, 3475}

$$-\frac{a^2c^2\tan(e+fx)\sqrt{c-c\sec(e+fx)}}{f\sqrt{a\sec(e+fx)+a}}+\frac{a^2c^3\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a^2c\tan(e+fx)(c-c\sec(e+fx)}{2f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] (a^2*c^3*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c
 - c*Sec[e + f*x]]) - (a^2*c^2*Sqrt[c - c*Sec[e + f*x]]*Tan[e + f*x])/(f*Sq
rt[a + a*Sec[e + f*x]]) - (a^2*c*(c - c*Sec[e + f*x])^(3/2)*Tan[e + f*x])/(
2*f*Sqrt[a + a*Sec[e + f*x]]) + (a^2*(c - c*Sec[e + f*x])^(5/2)*Tan[e + f*x
])/(3*f*Sqrt[a + a*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3906

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_.), x_Symbol] :> Simp[(2*a*c*Cot[e + f*x]*(c + d*Csc[e + f*x]
)^(n - 1))/(f*(2*n - 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[c, Int[Sqrt[a
+ b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && GtQ[n, 1/2]
```

Rule 3909

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-2*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a, Int[Sqrt[a + b
*Csc[e + f*x]]*(c + d*Csc[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] &&  !LeQ[n, -2^(-1)]
```

Rubi steps

$$\int (a + a\sec(e+fx))^{3/2}(c - c\sec(e+fx))^{5/2}\,dx = \frac{a^2(c - c\sec(e+fx))^{5/2}\tan(e+fx)}{3f\sqrt{a + a\sec(e+fx)}} + a\int \sqrt{a + a\sec(e+f}$$

$$= -\frac{a^2c(c - c\sec(e+fx))^{3/2}\tan(e+fx)}{2f\sqrt{a + a\sec(e+fx)}} + \frac{a^2(c - c\sec(e+fx}{3f\sqrt{a + a\,\mathrm{se}}}$$

$$= -\frac{a^2c^2\sqrt{c - c\sec(e+fx)}\tan(e+fx)}{f\sqrt{a + a\sec(e+fx)}} - \frac{a^2c(c - c\sec(e+fx}{2f\sqrt{a + a\,\mathrm{sec}}}$$

$$= -\frac{a^2c^2\sqrt{c - c\sec(e+fx)}\tan(e+fx)}{f\sqrt{a + a\sec(e+fx)}} - \frac{a^2c(c - c\sec(e+fx}{2f\sqrt{a + a\,\mathrm{sec}}}$$

$$= \frac{a^2c^3\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a + a\sec(e+fx)}\sqrt{c - c\sec(e+fx)}} - \frac{a^2c^2\sqrt{c - c\sec(e}}{f\sqrt{a + a\,\mathrm{s}}}$$

Mathematica [C] time = 1.28, size = 157, normalized size = 0.83

$$\frac{iac^2\csc\left(\frac{1}{2}(e+fx)\right)\sec\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\sqrt{c - c\sec(e+fx)}\left(6i\cos(2(e+fx)) + 3\right.}{24}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((I/24)*a*c^2*Csc[(e + f*x)/2]*(2*I + (6*I)*Cos[2*(e + f*x)] + 3*f*x*Cos[3*
(e + f*x)] + Cos[e + f*x]*(6*I + 9*f*x + (9*I)*Log[1 + E^((2*I)*(e + f*x))]
) + (3*I)*Cos[3*(e + f*x)]*Log[1 + E^((2*I)*(e + f*x))])*Sec[(e + f*x)/2]*S
ec[e + f*x]^2*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])/f
```

fricas [A] time = 0.57, size = 467, normalized size = 2.46

$$\left[-\frac{\left(7\,ac^2\cos\left(fx+e\right)^2 + ac^2\cos\left(fx+e\right) - 2\,ac^2\right)\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right) - 3\left(ac^2\cos\left(fx+\right.\right.}{6\left(f\cos\left(fx+e\right)^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] [-1/6*((7*a*c^2*cos(f*x + e)^2 + a*c^2*cos(f*x + e) - 2*a*c^2)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x
 + e) - 3*(a*c^2*cos(f*x + e)^3 + a*c^2*cos(f*x + e)^2)*sqrt(-a*c)*log(1/2*
(a*c*cos(f*x + e)^4 - (cos(f*x + e)^3 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*co
s(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f
*x + e) + a*c)/cos(f*x + e)^2))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^2), -1/6
*((7*a*c^2*cos(f*x + e)^2 + a*c^2*cos(f*x + e) - 2*a*c^2)*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e)
 - 6*(a*c^2*cos(f*x + e)^3 + a*c^2*cos(f*x + e)^2)*sqrt(a*c)*arctan(sqrt(a*
c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*
x + e))*cos(f*x + e)*sin(f*x + e)/(a*c*cos(f*x + e)^2 + a*c)))/(f*cos(f*x +
 e)^3 + f*cos(f*x + e)^2)]
```

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+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(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)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2
*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Warning, assuming -2*a+a is positive. Hint: run assume to make assumptions
on a variableWarning, assuming -2*a+a is positive. Hint: run assume to make
 assumptions on a variableWarning, assuming -2*a+a is positive. Hint: run a
ssume to make assumptions on a variableWarning, assuming -2*a+a is positive
. Hint: run assume to make assumptions on a variableUnable to check sign: (
4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>
(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2
)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check
sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nos
tep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_n
ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
 check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*p
i/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4
*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Un
able to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sig
n: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep
/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nost
ep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to ch
eck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/x
/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Una
ble to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(
-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign:
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/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*p
i/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to che
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Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2
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gn: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
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ervals (correct if the argument is real):Check [abs(t_nostep^3+t_nostep)]Wa
rning, integration of abs or sign assumes constant sign by intervals (corre
ct if the argument is real):Check [abs(t_nostep)]Sign error (%%%{2*c,0%%%}+
%%%{1,2%%%})Evaluation time: 4.52Limit: Max order reached or unable to make
 series expansion Error: Bad Argument Value
```

maple [A] time = 2.00, size = 190, normalized size = 1.00

$$\frac{\left(6\left(\cos^3\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-6\left(\cos^3\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-6\left(\cos^3\left(fx+e\right)\right)\ln\left(-\frac{-\sin(fx}{}\right.\right.}{6f\sin\left(fx+e\right)\left(-1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(5/2),x)
```

```
[Out] 1/6/f*(6*cos(f*x+e)^3*ln(2/(1+cos(f*x+e)))-6*cos(f*x+e)^3*ln(-(-1+cos(f*x+e
)+sin(f*x+e))/sin(f*x+e))-6*cos(f*x+e)^3*ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin
(f*x+e))-cos(f*x+e)^3-6*cos(f*x+e)^2-3*cos(f*x+e)+2)*(c*(-1+cos(f*x+e))/cos
(f*x+e))^(5/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/(-1+cos(f*x+e
))^2*a
```

maxima [B] time = 1.05, size = 1356, normalized size = 7.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] -1/3*(3*(f*x + e)*a*c^2*cos(6*f*x + 6*e)^2 + 27*(f*x + e)*a*c^2*cos(4*f*x +
 4*e)^2 + 27*(f*x + e)*a*c^2*cos(2*f*x + 2*e)^2 + 3*(f*x + e)*a*c^2*sin(6*f
*x + 6*e)^2 + 27*(f*x + e)*a*c^2*sin(4*f*x + 4*e)^2 + 27*(f*x + e)*a*c^2*si
n(2*f*x + 2*e)^2 + 18*(f*x + e)*a*c^2*cos(2*f*x + 2*e) + 3*(f*x + e)*a*c^2
- 6*a*c^2*sin(2*f*x + 2*e) - 3*(a*c^2*cos(6*f*x + 6*e)^2 + 9*a*c^2*cos(4*f*
x + 4*e)^2 + 9*a*c^2*cos(2*f*x + 2*e)^2 + a*c^2*sin(6*f*x + 6*e)^2 + 9*a*c^
2*sin(4*f*x + 4*e)^2 + 18*a*c^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 9*a*c^2
*sin(2*f*x + 2*e)^2 + 6*a*c^2*cos(2*f*x + 2*e) + a*c^2 + 2*(3*a*c^2*cos(4*f
*x + 4*e) + 3*a*c^2*cos(2*f*x + 2*e) + a*c^2)*cos(6*f*x + 6*e) + 6*(3*a*c^2
*cos(2*f*x + 2*e) + a*c^2)*cos(4*f*x + 4*e) + 6*(a*c^2*sin(4*f*x + 4*e) + a
*c^2*sin(2*f*x + 2*e))*sin(6*f*x + 6*e))*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e) + 1) + 6*(3*(f*x + e)*a*c^2*cos(4*f*x + 4*e) + 3*(f*x + e)*a*c^2*c
os(2*f*x + 2*e) + (f*x + e)*a*c^2 - a*c^2*sin(4*f*x + 4*e) - a*c^2*sin(2*f*
x + 2*e))*cos(6*f*x + 6*e) + 18*(3*(f*x + e)*a*c^2*cos(2*f*x + 2*e) + (f*x
```

```
+ e)*a*c^2)*cos(4*f*x + 4*e) + 6*(a*c^2*sin(6*f*x + 6*e) + 3*a*c^2*sin(4*f*
x + 4*e) + 3*a*c^2*sin(2*f*x + 2*e))*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + 4*(a*c^2*sin(6*f*x + 6*e) + 3*a*c^2*sin(4*f*x + 4*e) + 3*a
*c^2*sin(2*f*x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + 6*(a*c^2*sin(6*f*x + 6*e) + 3*a*c^2*sin(4*f*x + 4*e) + 3*a*c^2*sin(2*f*x
 + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 6*(3*(f*x +
 e)*a*c^2*sin(4*f*x + 4*e) + 3*(f*x + e)*a*c^2*sin(2*f*x + 2*e) + a*c^2*cos
(4*f*x + 4*e) + a*c^2*cos(2*f*x + 2*e))*sin(6*f*x + 6*e) + 6*(9*(f*x + e)*a
*c^2*sin(2*f*x + 2*e) - a*c^2)*sin(4*f*x + 4*e) - 6*(a*c^2*cos(6*f*x + 6*e)
 + 3*a*c^2*cos(4*f*x + 4*e) + 3*a*c^2*cos(2*f*x + 2*e) + a*c^2)*sin(5/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(a*c^2*cos(6*f*x + 6*e) + 3*a
*c^2*cos(4*f*x + 4*e) + 3*a*c^2*cos(2*f*x + 2*e) + a*c^2)*sin(3/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) - 6*(a*c^2*cos(6*f*x + 6*e) + 3*a*c^2*c
os(4*f*x + 4*e) + 3*a*c^2*cos(2*f*x + 2*e) + a*c^2)*sin(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((2*(3*cos(4*f*x + 4*e) + 3*
cos(2*f*x + 2*e) + 1)*cos(6*f*x + 6*e) + cos(6*f*x + 6*e)^2 + 6*(3*cos(2*f*
x + 2*e) + 1)*cos(4*f*x + 4*e) + 9*cos(4*f*x + 4*e)^2 + 9*cos(2*f*x + 2*e)^
2 + 6*(sin(4*f*x + 4*e) + sin(2*f*x + 2*e))*sin(6*f*x + 6*e) + sin(6*f*x +
6*e)^2 + 9*sin(4*f*x + 4*e)^2 + 18*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 9*si
n(2*f*x + 2*e)^2 + 6*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(5/2),x)
[Out] int((a + a/cos(e + f*x))^(3/2)*(c - c/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((a+a*sec(f*x+e))**(3/2)*(c-c*sec(f*x+e))**(5/2),x)
[Out] Timed out
```

3.95 $\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^{3/2}\,dx$

Optimal. Leaf size=103

$$\frac{a^2c^2\tan^3(e+fx)}{2f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{a^2c^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

```
[Out] a^2*c^2*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))
^(1/2)+1/2*a^2*c^2*tan(f*x+e)^3/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)
```

Rubi [A] time = 0.11, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3905, 3473, 3475}

$$\frac{a^2c^2\tan^3(e+fx)}{2f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{a^2c^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (a^2*c^2*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c
 - c*Sec[e + f*x]]) + (a^2*c^2*Tan[e + f*x]^3)/(2*f*Sqrt[a + a*Sec[e + f*x]
]*Sqrt[c - c*Sec[e + f*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 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^{3/2}\,dx=\frac{\left(a^2c^2\tan(e+fx)\right)\int \tan^3(e+fx)\,dx}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}$$

$$=\frac{a^2c^2\tan^3(e+fx)}{2f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}-\frac{\left(a^2c^2\tan(e+fx\right.}{\sqrt{a+a\sec(e+fx}}$$

$$=\frac{a^2c^2\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}+\frac{a^2c^2\tan}{2f\sqrt{a+a\sec(e+f}}$$

Mathematica [C] time = 1.39, size = 159, normalized size = 1.54

$$\frac{iace^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2\left(\cot\left(\frac{1}{2}(e+fx)\right)+i\right)\sec^3(e+fx)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}\left(i\log\left(1\right.\right.}{8f\left(1+e^{i(e+fx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] ((I/8)*a*c*(1 + E^((2*I)*(e + f*x)))^2*(I + Cot[(e + f*x)/2])*(I + f*x + Co
s[2*(e + f*x)]*(f*x + I*Log[1 + E^((2*I)*(e + f*x))]) + I*Log[1 + E^((2*I)*
(e + f*x))])*Sec[e + f*x]^3*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f
*x]])/(E^((2*I)*(e + f*x))*(1 + E^(I*(e + f*x)))*f)
```

fricas [A] time = 0.59, size = 346, normalized size = 3.36

$$\left[\frac{\sqrt{-ac}\,ac\cos\left(fx+e\right)\log\left(\frac{ac\cos\left(fx+e\right)^4-\left(\cos\left(fx+e\right)^3+\cos\left(fx+e\right)\right)\sqrt{-ac}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)+ac}{2\cos\left(fx+e\right)^2}\right)-ac\sqrt{\frac{a\cos}{\cos}}}{2f\cos\left(fx+e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] [1/2*(sqrt(-a*c)*a*c*cos(f*x + e)*log(1/2*(a*c*cos(f*x + e)^4 - (cos(f*x +
e)^3 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqr
t((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + a*c)/cos(f*x + e)^2) -
a*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f
*x + e))*sin(f*x + e))/(f*cos(f*x + e)), 1/2*(2*sqrt(a*c)*a*c*arctan(sqrt(a
*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f
*x + e))*cos(f*x + e)*sin(f*x + e)/(a*c*cos(f*x + e)^2 + a*c))*cos(f*x + e)
 - a*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/co
s(f*x + e))*sin(f*x + e))/(f*cos(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+a*sec(f*x+e))^(3/2)*(c-c*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
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Warning, assuming -2*a+a is positive. Hint: run assume to make assumptions
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d or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.08, size = 172, normalized size = 1.67

$$-\frac{\left(2\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)+2\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)-2\ln\left(\frac{2}{1+\cos\left(fx\right.}\right.\right.}{2f\sin\left(fx+e\right)\left(-1+\cos\left(fx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/2/f*(2*ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)^2+2*ln(-(-1
+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))*cos(f*x+e)^2-2*ln(2/(1+cos(f*x+e)))*cos
(f*x+e)^2-cos(f*x+e)^2+1)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(3/2)*(a*(1+cos(f*
x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/(-1+cos(f*x+e))*a
```

maxima [B] time = 0.89, size = 477, normalized size = 4.63

$$-\frac{\left(\left(fx+e\right)ac\cos\left(4\,fx+4\,e\right)^{2}+4\left(fx+e\right)ac\cos\left(2\,fx+2\,e\right)^{2}+\left(fx+e\right)ac\sin\left(4\,fx+4\,e\right)^{2}+4\left(fx+e\right)ac\sin\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*a*c*cos(4*f*x + 4*e)^2 + 4*(f*x + e)*a*c*cos(2*f*x + 2*e)^2 + (
f*x + e)*a*c*sin(4*f*x + 4*e)^2 + 4*(f*x + e)*a*c*sin(2*f*x + 2*e)^2 + 4*(f
*x + e)*a*c*cos(2*f*x + 2*e) + (f*x + e)*a*c - 2*a*c*sin(2*f*x + 2*e) - (a*
c*cos(4*f*x + 4*e)^2 + 4*a*c*cos(2*f*x + 2*e)^2 + a*c*sin(4*f*x + 4*e)^2 +
4*a*c*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*a*c*sin(2*f*x + 2*e)^2 + 4*a*c*
cos(2*f*x + 2*e) + a*c + 2*(2*a*c*cos(2*f*x + 2*e) + a*c)*cos(4*f*x + 4*e))
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) + 2*(2*(f*x + e)*a*c*cos(2
*f*x + 2*e) + (f*x + e)*a*c - a*c*sin(2*f*x + 2*e))*cos(4*f*x + 4*e) + 2*(2
*(f*x + e)*a*c*sin(2*f*x + 2*e) + a*c*cos(2*f*x + 2*e))*sin(4*f*x + 4*e))*s
qrt(a)*sqrt(c)/((2*(2*cos(2*f*x + 2*e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x +
4*e)^2 + 4*cos(2*f*x + 2*e)^2 + sin(4*f*x + 4*e)^2 + 4*sin(4*f*x + 4*e)*sin
(2*f*x + 2*e) + 4*sin(2*f*x + 2*e)^2 + 4*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{3/2}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)*(c - c/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((a+a*sec(f*x+e))**(3/2)*(c-c*sec(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.96 $\int (a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=93

$$\frac{a^2c\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{ac\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{f\sqrt{c-c\sec(e+fx)}}$$

```
[Out] a^2*c*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)-a*c*(a+a*sec(f*x+e))^(1/2)*tan(f*x+e)/f/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3906, 3905, 3475}

$$\frac{a^2c\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{ac\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{f\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a^2*c*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) - (a*c*Sqrt[a + a*Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[c -
 c*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3906

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_.), x_Symbol] :> Simp[(2*a*c*Cot[e + f*x]*(c + d*Csc[e + f*x]
)^(n - 1))/(f*(2*n - 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[c, Int[Sqrt[a
+ b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && GtQ[n, 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}\,dx=-\frac{ac\sqrt{a+a\sec(e+fx)}\tan(e+fx)}{f\sqrt{c-c\sec(e+fx)}}+a\int\sqrt{a+a\sec(e+fx)}$$

$$=-\frac{ac\sqrt{a+a\sec(e+fx)}\tan(e+fx)}{f\sqrt{c-c\sec(e+fx)}}-\frac{\left(a^2c\tan(e+fx)\right)\int t}{\sqrt{a+a\sec(e+fx)}\sqrt{c}}$$

$$=\frac{a^2c\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}-\frac{ac\sqrt{a+a\sec(e+}}{f\sqrt{c-c\sec}}$$

Mathematica [C] time = 0.78, size = 128, normalized size = 1.38

$$\frac{ae^{-i(e+fx)}\left(1+e^{2i(e+fx)}\right)\left(\cot\left(\frac{1}{2}(e+fx)\right)+i\right)\sec(e+fx)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}\left(1+\left(ifx-\log\left(\right.\right.\right.}{2f\left(1+e^{i(e+fx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a*(1 + E^((2*I)*(e + f*x)))*(I + Cot[(e + f*x)/2])*(1 + Cos[e + f*x]*(I*f*
x - Log[1 + E^((2*I)*(e + f*x))]))*Sec[e + f*x]*Sqrt[a*(1 + Sec[e + f*x])]*
Sqrt[c - c*Sec[e + f*x]])/(2*E^(I*(e + f*x))*(1 + E^(I*(e + f*x)))*f)
```

fricas [A] time = 0.57, size = 347, normalized size = 3.73

$$\left[\frac{2\,a\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)+\sqrt{-ac}\left(a\cos\left(fx+e\right)+a\right)\log\left(\frac{ac\cos\left(fx+e\right)^{4}-\left(\cos\left(fx+e\right)^{3}+\cos\left(fx+e\right)\right)\sqrt{-}}{2\cos}\right.}{2\left(f\cos\left(fx+e\right)+f\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/2*(2*a*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)
/cos(f*x + e))*sin(f*x + e) + sqrt(-a*c)*(a*cos(f*x + e) + a)*log(1/2*(a*c*
cos(f*x + e)^4 - (cos(f*x + e)^3 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x +
e) + a*c)/cos(f*x + e)^2))/(f*cos(f*x + e) + f), (a*sqrt((a*cos(f*x + e) +
a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + sqr
t(a*c)*(a*cos(f*x + e) + a)*arctan(sqrt(a*c)*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)
/(a*c*cos(f*x + e)^2 + a*c)))/(f*cos(f*x + e) + f)]
```

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+a*sec(f*x+e))^(3/2)*(c-c*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
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on a variableWarning, assuming -2*a+a is positive. Hint: run assume to make
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ssume to make assumptions on a variableWarning, assuming -2*a+a is positive
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s(t_nostep)]Sign error (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluation time: 3.32Limi
t: Max order reached or unable to make series expansion Error: Bad Argument
 Value
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maple [A] time = 2.03, size = 152, normalized size = 1.63

$$-\frac{\left(\cos\left(fx+e\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+\cos\left(fx+e\right)\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+\right.}\right)\right.}{f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(cos(f*x+e)*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+cos(f*x+e)*ln(-
(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))-cos(f*x+e)*ln(2/(1+cos(f*x+e)))-cos(
f*x+e)-1)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)*(a*(1+cos(f*x+e))/cos(f*x+e)
)^(1/2)/sin(f*x+e)*a
```

maxima [B] time = 0.99, size = 243, normalized size = 2.61

$$-\frac{\left(\left(fx+e\right)a\cos\left(2\,fx+2\,e\right)^{2}+\left(fx+e\right)a\sin\left(2\,fx+2\,e\right)^{2}+2\left(fx+e\right)a\cos\left(2\,fx+2\,e\right)-2\,a\cos\left(\frac{1}{2}\arctan\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*a*cos(2*f*x + 2*e)^2 + (f*x + e)*a*sin(2*f*x + 2*e)^2 + 2*(f*x
+ e)*a*cos(2*f*x + 2*e) - 2*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))*sin(2*f*x + 2*e) + (f*x + e)*a - (a*cos(2*f*x + 2*e)^2 + a*sin(2*f*
x + 2*e)^2 + 2*a*cos(2*f*x + 2*e) + a)*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e) + 1) + 2*(a*cos(2*f*x + 2*e) + a)*sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)
^2 + 2*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(1/2), x)
```

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

$$\int \left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)*(c-c*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)*sqrt(-c*(sec(e + f*x) - 1)), x)
```

3.97 $\int \frac{(a+a\sec(e+fx))^{3/2}}{\sqrt{c-c\sec(e+fx)}}\,dx$

Optimal. Leaf size=104

$$\frac{2a^2\tan(e+fx)\log(1-\sec(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{a^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] a^2*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)+2*a^2*ln(1-sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+
e))^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3912, 72}

$$\frac{2a^2\tan(e+fx)\log(1-\sec(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{a^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a^2*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]]) + (2*a^2*Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*
Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+a\sec(e+fx))^{3/2}}{\sqrt{c-c\sec(e+fx)}}\,dx &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{a+ax}{x(c-cx)}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int\left(-\frac{2a}{c(-1+x)}+\frac{a}{cx}\right)dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= \frac{a^2\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}+\frac{2a^2\log(1-\sec(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\end{aligned}$$

Mathematica [C] time = 1.20, size = 105, normalized size = 1.01

$$-\frac{a\left(-1+e^{i(e+fx)}\right)\left(4i\log\left(1-e^{i(e+fx)}\right)-i\log\left(1+e^{2i(e+fx)}\right)+fx\right)\sqrt{a(\sec(e+fx)+1)}}{f\left(1+e^{i(e+fx)}\right)\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] -((a*(-1 + E^(I*(e + f*x)))*(f*x + (4*I)*Log[1 - E^(I*(e + f*x))] - I*Log[1
 + E^((2*I)*(e + f*x))])*Sqrt[a*(1 + Sec[e + f*x])])/((1 + E^(I*(e + f*x)))
*f*Sqrt[c - c*Sec[e + f*x]]))
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{-c\sec\left(fx+e\right)+c}}{c\sec\left(fx+e\right)-c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral(-(a*sec(f*x + e) + a)^(3/2)*sqrt(-c*sec(f*x + e) + c)/(c*sec(f*x +
 e) - c), 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+a*sec(f*x+e))^(3/2)/(c-c*sec(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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intervals (correct if the argument is real):Check [abs(t_nostep^3+t_nostep)
]Discontinuities at zeroes of t_nostep^3+t_nostep were not checkedUnable to
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f the argument is real):Check [abs(t_nostep),abs(t_nostep^2-1)]Warning, int
egration of abs or sign assumes constant sign by intervals (correct if the
argument is real):Check [abs(t_nostep)]Sign error (%%%{-a,0%%%}+%%%{1,2%%%}
)Sign error (%%%{-2*a,0%%%}+%%%{1,2%%%})Evaluation time: 2.71Limit: Max ord
er reached or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 1.95, size = 157, normalized size = 1.51

$$-\frac{\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(4\ln\left(-\frac{-1+\cos(fx+e)}{\sin(fx+e)}\right)-\ln\left(-\frac{-1+\cos(fx+e)+\sin(fx+e)}{\sin(fx+e)}\right)-\ln\left(-\frac{-\sin(fx+e)-1+\cos(fx+e)}{\sin(fx+e)}\right)-\ln\left(\frac{2}{1+\cos(fx+}\right.\right.}{f\sin(fx+e)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(4*ln(-(-1+cos(f*x+e))/sin(f*x+e))
-ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))-ln(-(-sin(f*x+e)-1+cos(f*x+e))/
sin(f*x+e))-ln(2/(1+cos(f*x+e))))*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)*cos(
f*x+e)/sin(f*x+e)/c*a
```

maxima [A] time = 0.56, size = 60, normalized size = 0.58

$$-\frac{\left((fx+e)a+a\arctan\left(\sin\left(2fx+2e\right),\cos\left(2fx+2e\right)+1\right)-4a\arctan\left(\sin\left(fx+e\right),\cos\left(fx+e\right)-1\right)\right)\sqrt{a}}{\sqrt{c}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*a + a*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) - 4*a*arc
tan2(sin(f*x + e), cos(f*x + e) - 1))*sqrt(a)/(sqrt(c)*f)
```

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

$$\int \frac{\left(a+\frac{a}{\cos(e+fx)}\right)^{3/2}}{\sqrt{c-\frac{c}{\cos(e+fx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}{\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)/sqrt(-c*(sec(e + f*x) - 1)), x)
```

3.98 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=100

$$\frac{a^2\tan(e+fx)\log(1-\cos(e+fx))}{cf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{2a^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}$$

```
[Out] -2*a^2*tan(f*x+e)/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a^2*ln(1-
cos(f*x+e))*tan(f*x+e)/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3908, 3911, 31}

$$\frac{a^2\tan(e+fx)\log(1-\cos(e+fx))}{cf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{2a^2\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (-2*a^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2
)) + (a^2*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c*f*Sqrt[a + a*Sec[e + f*x]]
*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3908

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-4*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a/c, Int[Sqrt[a +
 b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d,
 e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^{3/2}}\,dx &= -\frac{2a^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{a\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c-c\sec(e+fx)}}\,dx}{c}\\ &= -\frac{2a^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{\left(a^2\tan(e+fx)\right)\operatorname{Subst}\left(\int \frac{1}{-c+cx}\,d\right.}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c}}\\ &= -\frac{2a^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{a^2\log(1-\cos(e+fx))\tan(e+}{cf\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(}}\end{aligned}$$

Mathematica [C] time = 0.68, size = 115, normalized size = 1.15

$$\frac{a\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(-2\log\left(1-e^{i(e+fx)}\right)+\left(2\log\left(1-e^{i(e+fx)}\right)-ifx\right)\cos(e+fx)+ifx-2\right)}{cf(\cos(e+fx)-1)\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (a*(-2 + I*f*x - 2*Log[1 - E^(I*(e + f*x))] + Cos[e + f*x]*((-I)*f*x + 2*Lo
g[1 - E^(I*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(c*f*
(-1 + Cos[e + f*x])*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{-c\sec\left(fx+e\right)+c}}{c^{2}\sec\left(fx+e\right)^{2}-2\,c^{2}\sec\left(fx+e\right)+c^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] integral((a*sec(f*x + e) + a)^(3/2)*sqrt(-c*sec(f*x + e) + c)/(c^2*sec(f*x
 + e)^2 - 2*c^2*sec(f*x + e) + c^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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [A] time = 1.97, size = 161, normalized size = 1.61

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-2\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\cos\left(fx+e\right)+\cos\left(fx+e\right)-\ln\left(\frac{2}{1+\cos(f\cdots}\right.\right.}{f\cos\left(fx+e\right)\left(\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/f*(-1+cos(f*x+e))*(cos(f*x+e)*ln(2/(1+cos(f*x+e)))-2*ln(-(-1+cos(f*x+e))/
sin(f*x+e))*cos(f*x+e)+cos(f*x+e)-ln(2/(1+cos(f*x+e)))+2*ln(-(-1+cos(f*x+e)
)/sin(f*x+e))+1)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/cos(f*x+e)/(c*(-1+cos(
f*x+e))/cos(f*x+e))^(3/2)/sin(f*x+e)*a
```

maxima [A] time = 0.72, size = 95, normalized size = 0.95

$$\frac{\frac{2\sqrt{-a}\,a\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^{\frac{3}{2}}}-\frac{\sqrt{-a}\,a\log\left(\frac{\sin\left(fx+e\right)^{2}}{\left(\cos\left(fx+e\right)+1\right)^{2}}+1\right)}{c^{\frac{3}{2}}}+\frac{\sqrt{-a}\,a\left(\cos\left(fx+e\right)+1\right)^{2}}{c^{\frac{3}{2}}\sin\left(fx+e\right)^{2}}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] (2*sqrt(-a)*a*log(sin(f*x + e)/(cos(f*x + e) + 1))/c^(3/2) - sqrt(-a)*a*log
(sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)/c^(3/2) + sqrt(-a)*a*(cos(f*x + e
) + 1)^2/(c^(3/2)*sin(f*x + e)^2))/f
```

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

$$\int \frac{\left(a + \frac{a}{\cos(e+f\,x)}\right)^{3/2}}{\left(c - \frac{c}{\cos(e+f\,x)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}{\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)/(-c*(sec(e + f*x) - 1))**(3/2), x)
```

3.99 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=146

$$\frac{a^2\tan(e+fx)\log(1-\cos(e+fx))}{c^2f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a^2\tan(e+fx)}{cf\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a^2\tan(e+\ldots}{f\sqrt{a\sec(e+fx)+a}\,(c-\ldots}$$

```
[Out] -a^2*tan(f*x+e)/f/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2)-a^2*tan(f*x
+e)/c/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a^2*ln(1-cos(f*x+e))*
tan(f*x+e)/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3908, 3907, 3911, 31}

$$\frac{a^2\tan(e+fx)\log(1-\cos(e+fx))}{c^2f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a^2\tan(e+fx)}{cf\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a^2\tan(e+\ldots}{f\sqrt{a\sec(e+fx)+a}\,(c-\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] -((a^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5/2)
)) - (a^2*Tan[e + f*x])/(c*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^
(3/2)) + (a^2*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^2*f*Sqrt[a + a*Sec[e +
 f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3908

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-4*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a/c, Int[Sqrt[a +
 b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d,
 e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^{5/2}}\,dx = -\frac{a^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} + \frac{a\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{3/2}}\,dx}{c}$$

$$= -\frac{a^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} - \frac{a^2\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e$$

$$= -\frac{a^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} - \frac{a^2\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e$$

$$= -\frac{a^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}} - \frac{a^2\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e$$

Mathematica [C] time = 1.27, size = 153, normalized size = 1.05

$$\frac{a\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(6\log\left(1-e^{i(e+fx)}\right)+\left(-8\log\left(1-e^{i(e+fx)}\right)+4ifx-6\right)\cos(e+fx)+(2}{2c^2f(\cos(e+fx)-1)^2\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] (a*(4 - (3*I)*f*x + Cos[e + f*x]*(-6 + (4*I)*f*x - 8*Log[1 - E^(I*(e + f*x)
)]) + 6*Log[1 - E^(I*(e + f*x))] + Cos[2*(e + f*x)]*((-I)*f*x + 2*Log[1 - E
^(I*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(2*c^2*f*(-1
 + Cos[e + f*x])^2*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{-c\sec\left(fx+e\right)+c}}{c^3\sec\left(fx+e\right)^3-3\,c^3\sec\left(fx+e\right)^2+3\,c^3\sec\left(fx+e\right)-c^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral(-(a*sec(f*x + e) + a)^(3/2)*sqrt(-c*sec(f*x + e) + c)/(c^3*sec(f*x
 + e)^3 - 3*c^3*sec(f*x + e)^2 + 3*c^3*sec(f*x + e) - c^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((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [A] time = 2.10, size = 227, normalized size = 1.55

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(8\left(\cos^2\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-4\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)-5\left(\cos^2\left(fx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/4/f*(-1+cos(f*x+e))*(8*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-4*ln
(2/(1+cos(f*x+e)))*cos(f*x+e)^2-5*cos(f*x+e)^2-16*ln(-(-1+cos(f*x+e))/sin(f
*x+e))*cos(f*x+e)+8*cos(f*x+e)*ln(2/(1+cos(f*x+e)))-2*cos(f*x+e)+8*ln(-(-1+
cos(f*x+e))/sin(f*x+e))-4*ln(2/(1+cos(f*x+e)))+3)*(a*(1+cos(f*x+e))/cos(f*x
+e))^(1/2)/sin(f*x+e)/cos(f*x+e)^2/(c*(-1+cos(f*x+e))/cos(f*x+e))^(5/2)*a
```

maxima [B] time = 1.21, size = 1786, normalized size = 12.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*a*cos(4*f*x + 4*e)^2 + 36*(f*x + e)*a*cos(2*f*x + 2*e)^2 + 16*(
f*x + e)*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*(f*x
 + e)*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + (f*x + e)*
a*sin(4*f*x + 4*e)^2 + 36*(f*x + e)*a*sin(2*f*x + 2*e)^2 + 16*(f*x + e)*a*s
in(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*(f*x + e)*a*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 12*(f*x + e)*a*cos(2*f
*x + 2*e) + (f*x + e)*a - 2*(a*cos(4*f*x + 4*e)^2 + 36*a*cos(2*f*x + 2*e)^2
 + 16*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*a*cos(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + a*sin(4*f*x + 4*e)^2 +
12*a*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*a*sin(2*f*x + 2*e)^2 + 16*a*sin
(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*a*sin(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*(6*a*cos(2*f*x + 2*e) + a)*cos(4
*f*x + 4*e) + 12*a*cos(2*f*x + 2*e) - 8*(a*cos(4*f*x + 4*e) + 6*a*cos(2*f*x
 + 2*e) - 4*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a)*cos
(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 8*(a*cos(4*f*x + 4*e) +
 6*a*cos(2*f*x + 2*e) + a)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) - 8*(a*sin(4*f*x + 4*e) + 6*a*sin(2*f*x + 2*e) - 4*a*sin(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) - 8*(a*sin(4*f*x + 4*e) + 6*a*sin(2*f*x + 2*e))*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a)*arctan2(sin(1/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) - 1) + 2*(6*(f*x + e)*a*cos(2*f*x + 2*e) + (f*x + e)*a - 4*a*sin
(2*f*x + 2*e))*cos(4*f*x + 4*e) - 2*(4*(f*x + e)*a*cos(4*f*x + 4*e) + 24*(f
*x + e)*a*cos(2*f*x + 2*e) - 16*(f*x + e)*a*cos(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) + 4*(f*x + e)*a + 3*a*sin(4*f*x + 4*e) + 2*a*sin(2*f*
x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*(4*(f*x
+ e)*a*cos(4*f*x + 4*e) + 24*(f*x + e)*a*cos(2*f*x + 2*e) + 4*(f*x + e)*a +
 3*a*sin(4*f*x + 4*e) + 2*a*sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) + 4*(3*(f*x + e)*a*sin(2*f*x + 2*e) + 2*a*cos(2*f*x
 + 2*e))*sin(4*f*x + 4*e) - 8*a*sin(2*f*x + 2*e) - 2*(4*(f*x + e)*a*sin(4*f
*x + 4*e) + 24*(f*x + e)*a*sin(2*f*x + 2*e) - 16*(f*x + e)*a*sin(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 3*a*cos(4*f*x + 4*e) - 2*a*cos(2*f
*x + 2*e) - 3*a)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*(
4*(f*x + e)*a*sin(4*f*x + 4*e) + 24*(f*x + e)*a*sin(2*f*x + 2*e) - 3*a*cos(
4*f*x + 4*e) - 2*a*cos(2*f*x + 2*e) - 3*a)*sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((c^3*cos(4*f*x + 4*e)^2 + 36*c^3*cos
(2*f*x + 2*e)^2 + 16*c^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
))^2 + 16*c^3*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + c^3*
sin(4*f*x + 4*e)^2 + 12*c^3*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*c^3*sin(
2*f*x + 2*e)^2 + 16*c^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 16*c^3*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 12*c^
3*cos(2*f*x + 2*e) + c^3 + 2*(6*c^3*cos(2*f*x + 2*e) + c^3)*cos(4*f*x + 4*e
```

```
) - 8*(c^3*cos(4*f*x + 4*e) + 6*c^3*cos(2*f*x + 2*e) - 4*c^3*cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + c^3)*cos(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 8*(c^3*cos(4*f*x + 4*e) + 6*c^3*cos(2*f*x + 2*e)
+ c^3)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 8*(c^3*sin(4*
f*x + 4*e) + 6*c^3*sin(2*f*x + 2*e) - 4*c^3*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 - 8*(c^3*sin(4*f*x + 4*e) + 6*c^3*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^(5/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}{\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**(5/2),x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)/(-c*(sec(e + f*x) - 1))**(5/2), x)
```

3.100 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=196

$$\frac{a^2\tan(e+fx)\log(1-\cos(e+fx))}{c^3f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a^2\tan(e+fx)}{c^2f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a^2\tan(e}{2cf\sqrt{a\sec(e+fx)+a}\,(}$$

```
[Out] -2/3*a^2*tan(f*x+e)/f/(c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(1/2)-1/2*a^2
*tan(f*x+e)/c/f/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2)-a^2*tan(f*x+e
)/c^2/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a^2*ln(1-cos(f*x+e))*
tan(f*x+e)/c^3/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$, Rules used = {3908, 3907, 3911, 31}

$$-\frac{a^2\tan(e+fx)}{c^2f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}+\frac{a^2\tan(e+fx)\log(1-\cos(e+fx))}{c^3f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a^2\tan(}{2cf\sqrt{a\sec(e+fx)+}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] (-2*a^2*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(7
/2)) - (a^2*Tan[e + f*x])/(2*c*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*
x])^(5/2)) - (a^2*Tan[e + f*x])/(c^2*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[
e + f*x])^(3/2)) + (a^2*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^3*f*Sqrt[a +
 a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3908

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-4*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a/c, Int[Sqrt[a +
 b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d,
 e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{(c-c\sec(e+fx))^{7/2}}\,dx = -\frac{2a^2\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} + \frac{a\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{5/2}}\,dx}{c}$$

$$= -\frac{2a^2\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a^2\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{2a^2\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a^2\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{2a^2\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a^2\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{2a^2\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a^2\tan(e+fx)}{2cf\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

Mathematica [C] time = 2.20, size = 199, normalized size = 1.02

$$\frac{a\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(-60\log\left(1-e^{i(e+fx)}\right)-3ifx\cos(3(e+fx))+6i\left(6i\log\left(1-e^{i(e+fx)}\right)+\right.}{12c^3f(\cos(e+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] (a*(-50 + (30*I)*f*x - (3*I)*f*x*Cos[3*(e + f*x)] + (6*I)*Cos[2*(e + f*x)]*
(4*I + 3*f*x + (6*I)*Log[1 - E^(I*(e + f*x))]) - 60*Log[1 - E^(I*(e + f*x))
] + 6*Cos[3*(e + f*x)]*Log[1 - E^(I*(e + f*x))] + Cos[e + f*x]*(66 - (45*I)
*f*x + 90*Log[1 - E^(I*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*
x)/2])/(12*c^3*f*(-1 + Cos[e + f*x])^3*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{-c\sec\left(fx+e\right)+c}}{c^4\sec\left(fx+e\right)^4-4\,c^4\sec\left(fx+e\right)^3+6\,c^4\sec\left(fx+e\right)^2-4\,c^4\sec\left(fx+e\right)+c^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="frica
s")
```

```
[Out] integral((a*sec(f*x + e) + a)^(3/2)*sqrt(-c*sec(f*x + e) + c)/(c^4*sec(f*x
+ e)^4 - 4*c^4*sec(f*x + e)^3 + 6*c^4*sec(f*x + e)^2 - 4*c^4*sec(f*x + e) +
 c^4), 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+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="giac"
)
```

[Out] Timed out

maple [A] time = 2.30, size = 289, normalized size = 1.47

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(24\left(\cos^{3}\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-48\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^{3}\left(fx+e\right)\right)+35\left(\cos^{3}\left(fx+\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(7/2),x)
```

```
[Out] 1/24/f*(-1+cos(f*x+e))*(24*cos(f*x+e)^3*ln(2/(1+cos(f*x+e)))-48*ln(-(-1+cos
(f*x+e))/sin(f*x+e))*cos(f*x+e)^3+35*cos(f*x+e)^3-72*ln(2/(1+cos(f*x+e)))*c
os(f*x+e)^2+144*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-9*cos(f*x+e)^2
+72*cos(f*x+e)*ln(2/(1+cos(f*x+e)))-144*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos
(f*x+e)-27*cos(f*x+e)-24*ln(2/(1+cos(f*x+e)))+48*ln(-(-1+cos(f*x+e))/sin(f*
x+e))+17)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/(c*(-1+cos(f*x+e))/cos(f*x+e)
)^(7/2)/sin(f*x+e)/cos(f*x+e)^3*a
```

maxima [B] time = 3.66, size = 3480, normalized size = 17.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="maxim
a")
```

```
[Out] -1/3*(3*(f*x + e)*a*cos(6*f*x + 6*e)^2 + 675*(f*x + e)*a*cos(4*f*x + 4*e)^2
 + 675*(f*x + e)*a*cos(2*f*x + 2*e)^2 + 108*(f*x + e)*a*cos(5/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 1200*(f*x + e)*a*cos(3/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 108*(f*x + e)*a*cos(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e)))^2 + 3*(f*x + e)*a*sin(6*f*x + 6*e)^2 + 675*(
f*x + e)*a*sin(4*f*x + 4*e)^2 + 675*(f*x + e)*a*sin(2*f*x + 2*e)^2 + 108*(f
*x + e)*a*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 1200*(f*
x + e)*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 108*(f*x
+ e)*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 90*(f*x + e
)*a*cos(2*f*x + 2*e) + 3*(f*x + e)*a - 6*(a*cos(6*f*x + 6*e)^2 + 225*a*cos(
4*f*x + 4*e)^2 + 225*a*cos(2*f*x + 2*e)^2 + 36*a*cos(5/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 400*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e)))^2 + 36*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + a*sin(6*f*x + 6*e)^2 + 225*a*sin(4*f*x + 4*e)^2 + 450*a*sin(4*f*x + 4
*e)*sin(2*f*x + 2*e) + 225*a*sin(2*f*x + 2*e)^2 + 36*a*sin(5/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 400*a*sin(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e)))^2 + 36*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 + 2*(15*a*cos(4*f*x + 4*e) + 15*a*cos(2*f*x + 2*e) + a)*cos(6*f*x
 + 6*e) + 30*(15*a*cos(2*f*x + 2*e) + a)*cos(4*f*x + 4*e) + 30*a*cos(2*f*x
+ 2*e) - 12*(a*cos(6*f*x + 6*e) + 15*a*cos(4*f*x + 4*e) + 15*a*cos(2*f*x +
2*e) - 20*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 6*a*cos(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a)*cos(5/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))) - 40*(a*cos(6*f*x + 6*e) + 15*a*cos(4*f*x +
 4*e) + 15*a*cos(2*f*x + 2*e) - 6*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + a)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1
2*(a*cos(6*f*x + 6*e) + 15*a*cos(4*f*x + 4*e) + 15*a*cos(2*f*x + 2*e) + a)*
cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 30*(a*sin(4*f*x + 4*
e) + a*sin(2*f*x + 2*e))*sin(6*f*x + 6*e) - 12*(a*sin(6*f*x + 6*e) + 15*a*s
in(4*f*x + 4*e) + 15*a*sin(2*f*x + 2*e) - 20*a*sin(3/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - 6*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
```

```
+ 2*e))))*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 40*(a*sin(
6*f*x + 6*e) + 15*a*sin(4*f*x + 4*e) + 15*a*sin(2*f*x + 2*e) - 6*a*sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 12*(a*sin(6*f*x + 6*e) + 15*a*sin(4*f*x + 4*e) +
15*a*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + a)*arctan2(sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1) + 6*(15*(f*x + e)*a*cos(
4*f*x + 4*e) + 15*(f*x + e)*a*cos(2*f*x + 2*e) + (f*x + e)*a - 11*a*sin(4*f
*x + 4*e) - 11*a*sin(2*f*x + 2*e))*cos(6*f*x + 6*e) + 90*(15*(f*x + e)*a*co
s(2*f*x + 2*e) + (f*x + e)*a)*cos(4*f*x + 4*e) - 12*(3*(f*x + e)*a*cos(6*f*
x + 6*e) + 45*(f*x + e)*a*cos(4*f*x + 4*e) + 45*(f*x + e)*a*cos(2*f*x + 2*e
) - 60*(f*x + e)*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1
8*(f*x + e)*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 3*(f*x
 + e)*a + 2*a*sin(6*f*x + 6*e) - 3*a*sin(4*f*x + 4*e) - 3*a*sin(2*f*x + 2*e
) + 10*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(5/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(6*(f*x + e)*a*cos(6*f*x + 6*
e) + 90*(f*x + e)*a*cos(4*f*x + 4*e) + 90*(f*x + e)*a*cos(2*f*x + 2*e) - 36
*(f*x + e)*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 6*(f*x
+ e)*a + 5*a*sin(6*f*x + 6*e) + 9*a*sin(4*f*x + 4*e) + 9*a*sin(2*f*x + 2*e)
 - 6*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(3/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 12*(3*(f*x + e)*a*cos(6*f*x + 6*e)
 + 45*(f*x + e)*a*cos(4*f*x + 4*e) + 45*(f*x + e)*a*cos(2*f*x + 2*e) + 3*(f
*x + e)*a + 2*a*sin(6*f*x + 6*e) - 3*a*sin(4*f*x + 4*e) - 3*a*sin(2*f*x + 2
*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 6*(15*(f*x + e)
*a*sin(4*f*x + 4*e) + 15*(f*x + e)*a*sin(2*f*x + 2*e) + 11*a*cos(4*f*x + 4*
e) + 11*a*cos(2*f*x + 2*e))*sin(6*f*x + 6*e) + 6*(225*(f*x + e)*a*sin(2*f*x
 + 2*e) - 11*a)*sin(4*f*x + 4*e) - 66*a*sin(2*f*x + 2*e) - 12*(3*(f*x + e)*
a*sin(6*f*x + 6*e) + 45*(f*x + e)*a*sin(4*f*x + 4*e) + 45*(f*x + e)*a*sin(2
*f*x + 2*e) - 60*(f*x + e)*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) - 18*(f*x + e)*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) - 2*a*cos(6*f*x + 6*e) + 3*a*cos(4*f*x + 4*e) + 3*a*cos(2*f*x + 2*e) - 10
*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*a)*sin(5/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(6*(f*x + e)*a*sin(6*f*x + 6*
e) + 90*(f*x + e)*a*sin(4*f*x + 4*e) + 90*(f*x + e)*a*sin(2*f*x + 2*e) - 36
*(f*x + e)*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 5*a*cos
(6*f*x + 6*e) - 9*a*cos(4*f*x + 4*e) - 9*a*cos(2*f*x + 2*e) + 6*a*cos(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 5*a)*sin(3/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) - 12*(3*(f*x + e)*a*sin(6*f*x + 6*e) + 45*(f*x
 + e)*a*sin(4*f*x + 4*e) + 45*(f*x + e)*a*sin(2*f*x + 2*e) - 2*a*cos(6*f*x
+ 6*e) + 3*a*cos(4*f*x + 4*e) + 3*a*cos(2*f*x + 2*e) - 2*a)*sin(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((c^4*cos(6*f*x + 6*
e)^2 + 225*c^4*cos(4*f*x + 4*e)^2 + 225*c^4*cos(2*f*x + 2*e)^2 + 36*c^4*cos
(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 400*c^4*cos(3/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 36*c^4*cos(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e)))^2 + c^4*sin(6*f*x + 6*e)^2 + 225*c^4*sin(4*f*x
 + 4*e)^2 + 450*c^4*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 225*c^4*sin(2*f*x +
 2*e)^2 + 36*c^4*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4
00*c^4*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 36*c^4*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 30*c^4*cos(2*f*x + 2*e
) + c^4 + 2*(15*c^4*cos(4*f*x + 4*e) + 15*c^4*cos(2*f*x + 2*e) + c^4)*cos(6
*f*x + 6*e) + 30*(15*c^4*cos(2*f*x + 2*e) + c^4)*cos(4*f*x + 4*e) - 12*(c^4
*cos(6*f*x + 6*e) + 15*c^4*cos(4*f*x + 4*e) + 15*c^4*cos(2*f*x + 2*e) - 20*
c^4*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 6*c^4*cos(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + c^4)*cos(5/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) - 40*(c^4*cos(6*f*x + 6*e) + 15*c^4*cos(4*f*x +
 4*e) + 15*c^4*cos(2*f*x + 2*e) - 6*c^4*cos(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + c^4)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) - 12*(c^4*cos(6*f*x + 6*e) + 15*c^4*cos(4*f*x + 4*e) + 15*c^4*cos(2*f*x
+ 2*e) + c^4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 30*(c^
```

```
4*sin(4*f*x + 4*e) + c^4*sin(2*f*x + 2*e))*sin(6*f*x + 6*e) - 12*(c^4*sin(6
*f*x + 6*e) + 15*c^4*sin(4*f*x + 4*e) + 15*c^4*sin(2*f*x + 2*e) - 20*c^4*si
n(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 6*c^4*sin(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) - 40*(c^4*sin(6*f*x + 6*e) + 15*c^4*sin(4*f*x + 4*e) + 15*c
^4*sin(2*f*x + 2*e) - 6*c^4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 12*(c^4*sin(6
*f*x + 6*e) + 15*c^4*sin(4*f*x + 4*e) + 15*c^4*sin(2*f*x + 2*e))*sin(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c - c/cos(e + f*x))^(7/2),x)
[Out] int((a + a/cos(e + f*x))^(3/2)/(c - c/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((a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**(7/2),x)
[Out] Timed out
```

3.101 $\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^{5/2}\,dx$

Optimal. Leaf size=153

$$-\frac{a^3c^3\tan^5(e+fx)}{4f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{a^3c^3\tan^3(e+fx)}{2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{a^3c^3\tan(e+fx)\log}{f\sqrt{a\sec(e+fx)+a}\sqrt{}}$$

```
[Out] a^3*c^3*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))
^(1/2)+1/2*a^3*c^3*tan(f*x+e)^3/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)-1/4*a^3*c^3*tan(f*x+e)^5/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)
```

Rubi [A] time = 0.12, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3905, 3473, 3475}

$$-\frac{a^3c^3\tan^5(e+fx)}{4f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{a^3c^3\tan^3(e+fx)}{2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{a^3c^3\tan(e+fx)\log}{f\sqrt{a\sec(e+fx)+a}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] (a^3*c^3*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c
 - c*Sec[e + f*x]]) + (a^3*c^3*Tan[e + f*x]^3)/(2*f*Sqrt[a + a*Sec[e + f*x]
]*Sqrt[c - c*Sec[e + f*x]]) - (a^3*c^3*Tan[e + f*x]^5)/(4*f*Sqrt[a + a*Sec[
e + f*x]]*Sqrt[c - c*Sec[e + f*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 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^{5/2}\,dx = -\frac{\left(a^3c^3\tan(e+fx)\right)\int \tan^5(e+fx)\,dx}{\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$
$$= -\frac{a^3c^3\tan^5(e+fx)}{4f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}} + \frac{\left(a^3c^3\tan(e+fx\right.}{\sqrt{a+a\sec(e+f}}$$
$$= \frac{a^3c^3\tan^3(e+fx)}{2f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}} - \frac{a^3c^3\,\mathrm{ta}}{4f\sqrt{a+a\sec(e+}}$$
$$= \frac{a^3c^3\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}} + \frac{a^3c^3\,\mathrm{tar}}{2f\sqrt{a+a\sec(e+f}}$$

Mathematica [C] time = 1.54, size = 164, normalized size = 1.07

$$\frac{ia^2c^2\csc\left(\frac{1}{2}(e+fx)\right)\sec\left(\frac{1}{2}(e+fx)\right)\sec^3(e+fx)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}\left(3i\log\left(1+e^{2i(e+fx)}\right)+\right.}{16f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((I/16)*a^2*c^2*Csc[(e + f*x)/2]*(2*I + 3*f*x + Cos[4*(e + f*x)]*(f*x + I*L
og[1 + E^((2*I)*(e + f*x))]) + 4*Cos[2*(e + f*x)]*(I + f*x + I*Log[1 + E^((
2*I)*(e + f*x))]) + (3*I)*Log[1 + E^((2*I)*(e + f*x))])*Sec[(e + f*x)/2]*Se
c[e + f*x]^3*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])/f
```

fricas [A] time = 0.60, size = 405, normalized size = 2.65

$$\left[\frac{2\sqrt{-ac}\,a^2c^2\cos\left(fx+e\right)^3\log\left(\frac{ac\cos\left(fx+e\right)^4-\left(\cos\left(fx+e\right)^3+\cos\left(fx+e\right)\right)\sqrt{-ac}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)+ac}{2\cos\left(fx+e\right)^2}\right)-\left(3a^2c^2\right.}{4f\cos\left(fx+e\right)^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] [1/4*(2*sqrt(-a*c)*a^2*c^2*cos(f*x + e)^3*log(1/2*(a*c*cos(f*x + e)^4 - (co
s(f*x + e)^3 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + a*c)/cos(f*x +
e)^2) - (3*a^2*c^2*cos(f*x + e)^2 - a^2*c^2)*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x
+ e)^3), 1/4*(4*sqrt(a*c)*a^2*c^2*arctan(sqrt(a*c)*sqrt((a*cos(f*x + e) + a
)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*cos(f*x + e)*sin(f*
x + e)/(a*c*cos(f*x + e)^2 + a*c))*cos(f*x + e)^3 - (3*a^2*c^2*cos(f*x + e)
^2 - a^2*c^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e)
- c)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3)]
```

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+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(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)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
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-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Warning, assuming -2*a+a is positive. Hint: run assume to make assumptions
on a variableWarning, assuming -2*a+a is positive. Hint: run assume to make
 assumptions on a variableWarning, assuming -2*a+a is positive. Hint: run a
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ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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he argument is real):Check [abs(t_nostep^3+t_nostep)]Warning, integration o
f abs or sign assumes constant sign by intervals (correct if the argument i
s real):Check [abs(t_nostep)]Sign error (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluati
on time: 5.21Limit: Max order reached or unable to make series expansion Er
ror: Bad Argument Value
```

maple [A] time = 2.10, size = 192, normalized size = 1.25

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\left(4\left(\cos^{4}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+4\left(\cos^{4}\left(fx+e\right)\right)\ln\left(-\frac{-\sin\cdots}{\cdots}\right)\cdots\right.}{4f\sin\left(fx+e\right)\left(-1+\cos\left(f\cdots\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(
5/2)*(4*cos(f*x+e)^4*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+4*cos(f*x+e
)^4*ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))-4*cos(f*x+e)^4*ln(2/(1+cos(f
*x+e)))-3*cos(f*x+e)^4+4*cos(f*x+e)^2-1)/sin(f*x+e)/(-1+cos(f*x+e))^2/cos(f
*x+e)*a^2
```

maxima [B] time = 1.18, size = 1619, normalized size = 10.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*a^2*c^2*cos(8*f*x + 8*e)^2 + 16*(f*x + e)*a^2*c^2*cos(6*f*x + 6
*e)^2 + 36*(f*x + e)*a^2*c^2*cos(4*f*x + 4*e)^2 + 16*(f*x + e)*a^2*c^2*cos(
2*f*x + 2*e)^2 + (f*x + e)*a^2*c^2*sin(8*f*x + 8*e)^2 + 16*(f*x + e)*a^2*c^
2*sin(6*f*x + 6*e)^2 + 36*(f*x + e)*a^2*c^2*sin(4*f*x + 4*e)^2 + 16*(f*x +
e)*a^2*c^2*sin(2*f*x + 2*e)^2 + 8*(f*x + e)*a^2*c^2*cos(2*f*x + 2*e) + (f*x
 + e)*a^2*c^2 - 4*a^2*c^2*sin(2*f*x + 2*e) - (a^2*c^2*cos(8*f*x + 8*e)^2 +
16*a^2*c^2*cos(6*f*x + 6*e)^2 + 36*a^2*c^2*cos(4*f*x + 4*e)^2 + 16*a^2*c^2*
cos(2*f*x + 2*e)^2 + a^2*c^2*sin(8*f*x + 8*e)^2 + 16*a^2*c^2*sin(6*f*x + 6*
e)^2 + 36*a^2*c^2*sin(4*f*x + 4*e)^2 + 48*a^2*c^2*sin(4*f*x + 4*e)*sin(2*f*
x + 2*e) + 16*a^2*c^2*sin(2*f*x + 2*e)^2 + 8*a^2*c^2*cos(2*f*x + 2*e) + a^2
*c^2 + 2*(4*a^2*c^2*cos(6*f*x + 6*e) + 6*a^2*c^2*cos(4*f*x + 4*e) + 4*a^2*c
^2*cos(2*f*x + 2*e) + a^2*c^2)*cos(8*f*x + 8*e) + 8*(6*a^2*c^2*cos(4*f*x +
```

```
4*e) + 4*a^2*c^2*cos(2*f*x + 2*e) + a^2*c^2)*cos(6*f*x + 6*e) + 12*(4*a^2*c
^2*cos(2*f*x + 2*e) + a^2*c^2)*cos(4*f*x + 4*e) + 4*(2*a^2*c^2*sin(6*f*x +
6*e) + 3*a^2*c^2*sin(4*f*x + 4*e) + 2*a^2*c^2*sin(2*f*x + 2*e))*sin(8*f*x +
 8*e) + 16*(3*a^2*c^2*sin(4*f*x + 4*e) + 2*a^2*c^2*sin(2*f*x + 2*e))*sin(6*
f*x + 6*e))*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) + 2*(4*(f*x + e
)*a^2*c^2*cos(6*f*x + 6*e) + 6*(f*x + e)*a^2*c^2*cos(4*f*x + 4*e) + 4*(f*x
+ e)*a^2*c^2*cos(2*f*x + 2*e) + (f*x + e)*a^2*c^2 - 2*a^2*c^2*sin(6*f*x + 6
*e) - 2*a^2*c^2*sin(4*f*x + 4*e) - 2*a^2*c^2*sin(2*f*x + 2*e))*cos(8*f*x +
8*e) + 8*(6*(f*x + e)*a^2*c^2*cos(4*f*x + 4*e) + 4*(f*x + e)*a^2*c^2*cos(2*
f*x + 2*e) + (f*x + e)*a^2*c^2 + a^2*c^2*sin(4*f*x + 4*e))*cos(6*f*x + 6*e)
 + 4*(12*(f*x + e)*a^2*c^2*cos(2*f*x + 2*e) + 3*(f*x + e)*a^2*c^2 - 2*a^2*c
^2*sin(2*f*x + 2*e))*cos(4*f*x + 4*e) + 4*(2*(f*x + e)*a^2*c^2*sin(6*f*x +
6*e) + 3*(f*x + e)*a^2*c^2*sin(4*f*x + 4*e) + 2*(f*x + e)*a^2*c^2*sin(2*f*x
 + 2*e) + a^2*c^2*cos(6*f*x + 6*e) + a^2*c^2*cos(4*f*x + 4*e) + a^2*c^2*cos
(2*f*x + 2*e))*sin(8*f*x + 8*e) + 4*(12*(f*x + e)*a^2*c^2*sin(4*f*x + 4*e)
+ 8*(f*x + e)*a^2*c^2*sin(2*f*x + 2*e) - 2*a^2*c^2*cos(4*f*x + 4*e) - a^2*c
^2)*sin(6*f*x + 6*e) + 4*(12*(f*x + e)*a^2*c^2*sin(2*f*x + 2*e) + 2*a^2*c^2
*cos(2*f*x + 2*e) - a^2*c^2)*sin(4*f*x + 4*e))*sqrt(a)*sqrt(c)/((2*(4*cos(6
*f*x + 6*e) + 6*cos(4*f*x + 4*e) + 4*cos(2*f*x + 2*e) + 1)*cos(8*f*x + 8*e)
 + cos(8*f*x + 8*e)^2 + 8*(6*cos(4*f*x + 4*e) + 4*cos(2*f*x + 2*e) + 1)*cos
(6*f*x + 6*e) + 16*cos(6*f*x + 6*e)^2 + 12*(4*cos(2*f*x + 2*e) + 1)*cos(4*f
*x + 4*e) + 36*cos(4*f*x + 4*e)^2 + 16*cos(2*f*x + 2*e)^2 + 4*(2*sin(6*f*x
+ 6*e) + 3*sin(4*f*x + 4*e) + 2*sin(2*f*x + 2*e))*sin(8*f*x + 8*e) + sin(8*
f*x + 8*e)^2 + 16*(3*sin(4*f*x + 4*e) + 2*sin(2*f*x + 2*e))*sin(6*f*x + 6*e
) + 16*sin(6*f*x + 6*e)^2 + 36*sin(4*f*x + 4*e)^2 + 48*sin(4*f*x + 4*e)*sin
(2*f*x + 2*e) + 16*sin(2*f*x + 2*e)^2 + 8*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^(5/2),x)
[Out] int((a + a/cos(e + f*x))^(5/2)*(c - c/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((a+a*sec(f*x+e))**(5/2)*(c-c*sec(f*x+e))**(5/2),x)
[Out] Timed out
```

3.102 $\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^{3/2}\,dx$

Optimal. Leaf size=190

$$\frac{a^3c^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a^2c^2\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{f\sqrt{c-c\sec(e+fx)}}-\frac{ac^2\tan(e+fx)(a\sec(e+fx)+}{2f\sqrt{c-c\sec(e+fx)}}$$

```
[Out] -1/2*a*c^2*(a+a*sec(f*x+e))^(3/2)*tan(f*x+e)/f/(c-c*sec(f*x+e))^(1/2)+1/3*c
^2*(a+a*sec(f*x+e))^(5/2)*tan(f*x+e)/f/(c-c*sec(f*x+e))^(1/2)+a^3*c^2*ln(co
s(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-a^2*c^
2*(a+a*sec(f*x+e))^(1/2)*tan(f*x+e)/f/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.36, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3909, 3906, 3905, 3475}

$$-\frac{a^2c^2\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{f\sqrt{c-c\sec(e+fx)}}+\frac{a^3c^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{ac^2\tan(e+fx)(a\sec(e+fx}{2f\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (a^3*c^2*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c
 - c*Sec[e + f*x]]) - (a^2*c^2*Sqrt[a + a*Sec[e + f*x]]*Tan[e + f*x])/(f*Sq
rt[c - c*Sec[e + f*x]]) - (a*c^2*(a + a*Sec[e + f*x])^(3/2)*Tan[e + f*x])/(
2*f*Sqrt[c - c*Sec[e + f*x]]) + (c^2*(a + a*Sec[e + f*x])^(5/2)*Tan[e + f*x
])/(3*f*Sqrt[c - c*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3906

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_.), x_Symbol] :> Simp[(2*a*c*Cot[e + f*x]*(c + d*Csc[e + f*x]
)^(n - 1))/(f*(2*n - 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[c, Int[Sqrt[a
+ b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && GtQ[n, 1/2]
```

Rule 3909

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-2*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a, Int[Sqrt[a + b
*Csc[e + f*x]]*(c + d*Csc[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] &&  !LeQ[n, -2^(-1)]
```

Rubi steps

$$\int (a + a\sec(e + fx))^{5/2}(c - c\sec(e + fx))^{3/2}\,dx = \frac{c^2(a + a\sec(e + fx))^{5/2}\tan(e + fx)}{3f\sqrt{c - c\sec(e + fx)}} + c\int (a + a\sec(e + fx))^{5/}$$
$$= -\frac{ac^2(a + a\sec(e + fx))^{3/2}\tan(e + fx)}{2f\sqrt{c - c\sec(e + fx)}} + \frac{c^2(a + a\sec(e + fx))^{5}}{3f\sqrt{c - c\sec(e}}$$
$$= -\frac{a^2c^2\sqrt{a + a\sec(e + fx)}\tan(e + fx)}{f\sqrt{c - c\sec(e + fx)}} - \frac{ac^2(a + a\sec(e + fx))^{3}}{2f\sqrt{c - c\sec(e}}$$
$$= -\frac{a^2c^2\sqrt{a + a\sec(e + fx)}\tan(e + fx)}{f\sqrt{c - c\sec(e + fx)}} - \frac{ac^2(a + a\sec(e + fx))^{3}}{2f\sqrt{c - c\sec(e}}$$
$$= \frac{a^3c^2\log(\cos(e + fx))\tan(e + fx)}{f\sqrt{a + a\sec(e + fx)}\sqrt{c - c\sec(e + fx)}} - \frac{a^2c^2\sqrt{a + a\sec(e +}}{f\sqrt{c - c\sec}}$$

Mathematica [C] time = 1.20, size = 149, normalized size = 0.78

$$\frac{a^2c\csc\left(\frac{1}{2}(e + fx)\right)\sec\left(\frac{1}{2}(e + fx)\right)\sec^2(e + fx)\sqrt{a(\sec(e + fx) + 1)}\sqrt{c - c\sec(e + fx)}\left(6\cos(2(e + fx)) + 3ifx\right.}{24f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (a^2*c*Csc[(e + f*x)/2]*(2 + 6*Cos[2*(e + f*x)] + (3*I)*f*x*Cos[3*(e + f*x)
] + Cos[e + f*x]*(-6 + (9*I)*f*x - 9*Log[1 + E^((2*I)*(e + f*x))]) - 3*Cos[
3*(e + f*x)]*Log[1 + E^((2*I)*(e + f*x))])*Sec[(e + f*x)/2]*Sec[e + f*x]^2*
Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])/(24*f)
```

fricas [A] time = 0.58, size = 467, normalized size = 2.46

$$\left[\frac{\left(a^2c\cos\left(fx + e\right)^2 - 5\,a^2c\cos\left(fx + e\right) - 2\,a^2c\right)\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx + e\right) + 3\left(a^2c\cos\left(fx + e\right)^3\right.}{6\left(f\cos\left(fx + e\right)^3 + f\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] [1/6*((a^2*c*cos(f*x + e)^2 - 5*a^2*c*cos(f*x + e) - 2*a^2*c)*sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x
+ e) + 3*(a^2*c*cos(f*x + e)^3 + a^2*c*cos(f*x + e)^2)*sqrt(-a*c)*log(1/2*(
a*c*cos(f*x + e)^4 - (cos(f*x + e)^3 + cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*
x + e) + a*c)/cos(f*x + e)^2))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^2), 1/6*(
(a^2*c*cos(f*x + e)^2 - 5*a^2*c*cos(f*x + e) - 2*a^2*c)*sqrt((a*cos(f*x + e
) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) +
 6*(a^2*c*cos(f*x + e)^3 + a^2*c*cos(f*x + e)^2)*sqrt(a*c)*arctan(sqrt(a*c)
*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x
+ e))*cos(f*x + e)*sin(f*x + e)/(a*c*cos(f*x + e)^2 + a*c)))/(f*cos(f*x + e
)^3 + f*cos(f*x + e)^2)]
```

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+a*sec(f*x+e))^(5/2)*(c-c*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
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es constant sign by intervals (correct if the argument is real):Check [abs(
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rning, integration of abs or sign assumes constant sign by intervals (corre
ct if the argument is real):Check [abs(t_nostep)]Sign error (%%%{2*c,0%%%}+
%%%{1,2%%%})Evaluation time: 4.54Limit: Max order reached or unable to make
 series expansion Error: Bad Argument Value
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maple [A] time = 2.05, size = 200, normalized size = 1.05

$$\frac{\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(\frac{c(-1+\cos(fx+e))}{\cos(fx+e)}\right)^{\frac{3}{2}}\left(6\left(\cos^3\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos(fx+e)}\right)-6\left(\cos^3\left(fx+e\right)\right)\ln\left(-\frac{-\sin(fx+e)-1+\cos(}{\sin(fx+e)}\right.\right.}{6f\sin\left(fx+e\right)\cos\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(3/2),x)
```

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[Out] 1/6/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(3
/2)*(6*cos(f*x+e)^3*ln(2/(1+cos(f*x+e)))-6*cos(f*x+e)^3*ln(-(-sin(f*x+e)-1+
cos(f*x+e))/sin(f*x+e))-6*cos(f*x+e)^3*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f
*x+e))+7*cos(f*x+e)^3+6*cos(f*x+e)^2-3*cos(f*x+e)-2)/sin(f*x+e)/cos(f*x+e)/
(-1+cos(f*x+e))*a^2
```

maxima [B] time = 1.11, size = 1356, normalized size = 7.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] -1/3*(3*(f*x + e)*a^2*c*cos(6*f*x + 6*e)^2 + 27*(f*x + e)*a^2*c*cos(4*f*x +
 4*e)^2 + 27*(f*x + e)*a^2*c*cos(2*f*x + 2*e)^2 + 3*(f*x + e)*a^2*c*sin(6*f
*x + 6*e)^2 + 27*(f*x + e)*a^2*c*sin(4*f*x + 4*e)^2 + 27*(f*x + e)*a^2*c*si
n(2*f*x + 2*e)^2 + 18*(f*x + e)*a^2*c*cos(2*f*x + 2*e) + 3*(f*x + e)*a^2*c
- 6*a^2*c*sin(2*f*x + 2*e) - 3*(a^2*c*cos(6*f*x + 6*e)^2 + 9*a^2*c*cos(4*f*
x + 4*e)^2 + 9*a^2*c*cos(2*f*x + 2*e)^2 + a^2*c*sin(6*f*x + 6*e)^2 + 9*a^2*
c*sin(4*f*x + 4*e)^2 + 18*a^2*c*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 9*a^2*c
*sin(2*f*x + 2*e)^2 + 6*a^2*c*cos(2*f*x + 2*e) + a^2*c + 2*(3*a^2*c*cos(4*f
*x + 4*e) + 3*a^2*c*cos(2*f*x + 2*e) + a^2*c)*cos(6*f*x + 6*e) + 6*(3*a^2*c
*cos(2*f*x + 2*e) + a^2*c)*cos(4*f*x + 4*e) + 6*(a^2*c*sin(4*f*x + 4*e) + a
^2*c*sin(2*f*x + 2*e))*sin(6*f*x + 6*e))*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e) + 1) + 6*(3*(f*x + e)*a^2*c*cos(4*f*x + 4*e) + 3*(f*x + e)*a^2*c*c
os(2*f*x + 2*e) + (f*x + e)*a^2*c - a^2*c*sin(4*f*x + 4*e) - a^2*c*sin(2*f*
x + 2*e))*cos(6*f*x + 6*e) + 18*(3*(f*x + e)*a^2*c*cos(2*f*x + 2*e) + (f*x
```

```
+ e)*a^2*c)*cos(4*f*x + 4*e) - 6*(a^2*c*sin(6*f*x + 6*e) + 3*a^2*c*sin(4*f*
x + 4*e) + 3*a^2*c*sin(2*f*x + 2*e))*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) - 4*(a^2*c*sin(6*f*x + 6*e) + 3*a^2*c*sin(4*f*x + 4*e) + 3*a
^2*c*sin(2*f*x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 - 6*(a^2*c*sin(6*f*x + 6*e) + 3*a^2*c*sin(4*f*x + 4*e) + 3*a^2*c*sin(2*f*x
 + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 6*(3*(f*x +
 e)*a^2*c*sin(4*f*x + 4*e) + 3*(f*x + e)*a^2*c*sin(2*f*x + 2*e) + a^2*c*cos
(4*f*x + 4*e) + a^2*c*cos(2*f*x + 2*e))*sin(6*f*x + 6*e) + 6*(9*(f*x + e)*a
^2*c*sin(2*f*x + 2*e) - a^2*c)*sin(4*f*x + 4*e) + 6*(a^2*c*cos(6*f*x + 6*e)
 + 3*a^2*c*cos(4*f*x + 4*e) + 3*a^2*c*cos(2*f*x + 2*e) + a^2*c)*sin(5/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*(a^2*c*cos(6*f*x + 6*e) + 3*a
^2*c*cos(4*f*x + 4*e) + 3*a^2*c*cos(2*f*x + 2*e) + a^2*c)*sin(3/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + 6*(a^2*c*cos(6*f*x + 6*e) + 3*a^2*c*c
os(4*f*x + 4*e) + 3*a^2*c*cos(2*f*x + 2*e) + a^2*c)*sin(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((2*(3*cos(4*f*x + 4*e) + 3*
cos(2*f*x + 2*e) + 1)*cos(6*f*x + 6*e) + cos(6*f*x + 6*e)^2 + 6*(3*cos(2*f*
x + 2*e) + 1)*cos(4*f*x + 4*e) + 9*cos(4*f*x + 4*e)^2 + 9*cos(2*f*x + 2*e)^
2 + 6*(sin(4*f*x + 4*e) + sin(2*f*x + 2*e))*sin(6*f*x + 6*e) + sin(6*f*x +
6*e)^2 + 9*sin(4*f*x + 4*e)^2 + 18*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 9*si
n(2*f*x + 2*e)^2 + 6*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^(3/2),x)
[Out] int((a + a/cos(e + f*x))^(5/2)*(c - c/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((a+a*sec(f*x+e))**(5/2)*(c-c*sec(f*x+e))**(3/2),x)
[Out] Timed out
```

3.103 $\int (a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}\,dx$

Optimal. Leaf size=139

$$\frac{a^3c\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a^2c\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{f\sqrt{c-c\sec(e+fx)}}-\frac{ac\tan(e+fx)(a\sec(e+fx)+a}{2f\sqrt{c-c\sec(e+fx)}}$$

```
[Out] -1/2*a*c*(a+a*sec(f*x+e))^(3/2)*tan(f*x+e)/f/(c-c*sec(f*x+e))^(1/2)+a^3*c*l
n(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-a^
2*c*(a+a*sec(f*x+e))^(1/2)*tan(f*x+e)/f/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3906, 3905, 3475}

$$-\frac{a^2c\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{f\sqrt{c-c\sec(e+fx)}}+\frac{a^3c\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{ac\tan(e+fx)(a\sec(e+fx)+}{2f\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a^3*c*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) - (a^2*c*Sqrt[a + a*Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[c
 - c*Sec[e + f*x]]) - (a*c*(a + a*Sec[e + f*x])^(3/2)*Tan[e + f*x])/(2*f*Sq
rt[c - c*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3906

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_.), x_Symbol] :> Simp[(2*a*c*Cot[e + f*x]*(c + d*Csc[e + f*x]
)^(n - 1))/(f*(2*n - 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[c, Int[Sqrt[a
+ b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && GtQ[n, 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}\,dx = -\frac{ac(a+a\sec(e+fx))^{3/2}\tan(e+fx)}{2f\sqrt{c-c\sec(e+fx)}} + a\int (a+a\sec(e+fx))^{3/}$$

$$= -\frac{a^2c\sqrt{a+a\sec(e+fx)}\tan(e+fx)}{f\sqrt{c-c\sec(e+fx)}} - \frac{ac(a+a\sec(e+fx))^{3/2}\text{ta}}{2f\sqrt{c-c\sec(e+}}$$

$$= -\frac{a^2c\sqrt{a+a\sec(e+fx)}\tan(e+fx)}{f\sqrt{c-c\sec(e+fx)}} - \frac{ac(a+a\sec(e+fx))^{3/2}\text{ta}}{2f\sqrt{c-c\sec(e+}}$$

$$= \frac{a^3c\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}} - \frac{a^2c\sqrt{a+a\sec(e+fx}}{f\sqrt{c-c\sec(e}}$$

Mathematica [C] time = 1.40, size = 164, normalized size = 1.18

$$\frac{a^2e^{-i(e+fx)}\left(1+e^{2i(e+fx)}\right)\left(\cot\left(\frac{1}{2}(e+fx)\right)+i\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}\left(-\log\left(1+e^{2i(}\right.\right.}{4f\left(1+e^{i(e+fx)}\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a^2*(1 + E^((2*I)*(e + f*x)))*(I + Cot[(e + f*x)/2])*(1 + I*f*x + 4*Cos[e
+ f*x] + Cos[2*(e + f*x)]*(I*f*x - Log[1 + E^((2*I)*(e + f*x))]) - Log[1 +
E^((2*I)*(e + f*x))])*Sec[e + f*x]^2*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*
Sec[e + f*x]])/(4*E^(I*(e + f*x))*(1 + E^(I*(e + f*x)))*f)
```

fricas [A] time = 0.56, size = 420, normalized size = 3.02

$$\left[\frac{\left(5\,a^2\cos\left(fx+e\right)+a^2\right)\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)+\left(a^2\cos\left(fx+e\right)^2+a^2\cos\left(fx+e\right)\right)\sqrt{-ac}\,\text{lo}}{2\left(f\cos\left(fx+e\right)^2+f\cos\left(fx+e\right)\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/2*((5*a^2*cos(f*x + e) + a^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sq
rt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + (a^2*cos(f*x + e)^2 +
a^2*cos(f*x + e))*sqrt(-a*c)*log(1/2*(a*c*cos(f*x + e)^4 - (cos(f*x + e)^3
+ cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*
cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + a*c)/cos(f*x + e)^2))/(f*cos
(f*x + e)^2 + f*cos(f*x + e)), 1/2*((5*a^2*cos(f*x + e) + a^2)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x
 + e) + 2*(a^2*cos(f*x + e)^2 + a^2*cos(f*x + e))*sqrt(a*c)*arctan(sqrt(a*c
)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x
 + e))*cos(f*x + e)*sin(f*x + e)/(a*c*cos(f*x + e)^2 + a*c)))/(f*cos(f*x +
e)^2 + f*cos(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+a*sec(f*x+e))^(5/2)*(c-c*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or
sign assumes constant sign by intervals (correct if the argument is real):C
heck [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
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*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Warning, assuming -2*a+a is positive. Hint: run assume to make assumptions
on a variableWarning, assuming -2*a+a is positive. Hint: run assume to make
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ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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```
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```

```
sign: (4*pi/x/2)>(-4*pi/x/2)Warning, integration of abs or sign assumes co
nstant sign by intervals (correct if the argument is real):Check [abs(t_nos
tep^3+t_nostep)]Warning, integration of abs or sign assumes constant sign b
y intervals (correct if the argument is real):Check [abs(t_nostep)]Sign err
or (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluation time: 3.78Limit: Max order reached
 or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.32, size = 180, normalized size = 1.29

$$\frac{\left(2\ln\left(\frac{2}{1+\cos(fx+e)}\right)\left(\cos^2(fx+e)\right)-2\ln\left(-\frac{-\sin(fx+e)-1+\cos(fx+e)}{\sin(fx+e)}\right)\left(\cos^2(fx+e)\right)-2\ln\left(-\frac{-1+\cos(fx+e)+\sin(fx+e)}{\sin(fx+e)}\right.}{2f\cos(fx+e)\sin(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(2*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2-2*ln(-(-sin(f*x+e)-1+cos(f*x+e))
/sin(f*x+e))*cos(f*x+e)^2-2*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))*cos(
f*x+e)^2+3*cos(f*x+e)^2+4*cos(f*x+e)+1)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2
)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/cos(f*x+e)/sin(f*x+e)*a^2
```

maxima [B] time = 1.05, size = 710, normalized size = 5.11

$$-\frac{\left((fx+e)a^2\cos\left(4fx+4e\right)^2+4\left(fx+e\right)a^2\cos\left(2fx+2e\right)^2+\left(fx+e\right)a^2\sin\left(4fx+4e\right)^2+4\left(fx+e\right)a^2\mathrm{si}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*a^2*cos(4*f*x + 4*e)^2 + 4*(f*x + e)*a^2*cos(2*f*x + 2*e)^2 + (
f*x + e)*a^2*sin(4*f*x + 4*e)^2 + 4*(f*x + e)*a^2*sin(2*f*x + 2*e)^2 + 4*(f
*x + e)*a^2*cos(2*f*x + 2*e) + (f*x + e)*a^2 + 2*a^2*sin(2*f*x + 2*e) - (a^
2*cos(4*f*x + 4*e)^2 + 4*a^2*cos(2*f*x + 2*e)^2 + a^2*sin(4*f*x + 4*e)^2 +
4*a^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*a^2*sin(2*f*x + 2*e)^2 + 4*a^2*
cos(2*f*x + 2*e) + a^2 + 2*(2*a^2*cos(2*f*x + 2*e) + a^2)*cos(4*f*x + 4*e))
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) + 2*(2*(f*x + e)*a^2*cos(2
*f*x + 2*e) + (f*x + e)*a^2 + a^2*sin(2*f*x + 2*e))*cos(4*f*x + 4*e) - 4*(a
^2*sin(4*f*x + 4*e) + 2*a^2*sin(2*f*x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 4*(a^2*sin(4*f*x + 4*e) + 2*a^2*sin(2*f*x + 2*e))
*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(2*(f*x + e)*a^2*
sin(2*f*x + 2*e) - a^2*cos(2*f*x + 2*e))*sin(4*f*x + 4*e) + 4*(a^2*cos(4*f*
x + 4*e) + 2*a^2*cos(2*f*x + 2*e) + a^2)*sin(3/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) + 4*(a^2*cos(4*f*x + 4*e) + 2*a^2*cos(2*f*x + 2*e) + a^2
)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((2
*(2*cos(2*f*x + 2*e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x + 4*e)^2 + 4*cos(2*f
*x + 2*e)^2 + sin(4*f*x + 4*e)^2 + 4*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*
sin(2*f*x + 2*e)^2 + 4*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)*(c - c/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((a+a*sec(f*x+e))**(5/2)*(c-c*sec(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.104 $\int \frac{(a+a\sec(e+fx))^{5/2}}{\sqrt{c-c\sec(e+fx)}}\,dx$

Optimal. Leaf size=152

$$\frac{a^3\tan(e+fx)\sec(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{4a^3\tan(e+fx)\log(1-\sec(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{a^3\tan(e+fx)\log(\cos}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-}}$$

```
[Out] a^3*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)+4*a^3*ln(1-sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+
e))^(1/2)+a^3*sec(f*x+e)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e
))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = $\{3912, 72\}$

$$\frac{a^3\tan(e+fx)\sec(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{4a^3\tan(e+fx)\log(1-\sec(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{a^3\tan(e+fx)\log(\cos}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (a^3*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]]) + (4*a^3*Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*
Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (a^3*Sec[e + f*x]*Tan[e + f*x])/(
f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+a\sec(e+fx))^{5/2}}{\sqrt{c-c\sec(e+fx)}}\,dx &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(a+ax)^2}{x(c-cx)}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\
&= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(-\frac{a^2}{c}-\frac{4a^2}{c(-1+x)}+\frac{a^2}{cx}\right)dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\
&= \frac{a^3\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}+\frac{4a^3\log(1-\sec(e+fx))\tan(e+f}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+}}
\end{aligned}$$

Mathematica [C] time = 6.76, size = 292, normalized size = 1.92

$$\frac{\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\sec(e+fx)(a(\sec(e+fx)+1))^{5/2}\sqrt{(\cos(e+fx)+1)\sec(e+fx)}}{f(\sec(e+fx)+1)^{5/2}\sqrt{c-c\sec(e+fx)}}+\frac{\sqrt{2}e^{\frac{1}{2}i(e+fx)}\sqrt{\frac{\left(1+e^{i(e+fx)}\right)^2}{1+e^{2i(e+fx)}}}\left(8\log\left(\right.\right.}{f\left(1\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/Sqrt[c - c*Sec[e + f*x]],x]
```

```
[Out] (Sqrt[2]*E^((I/2)*(e + f*x))*Sqrt[(1 + E^(I*(e + f*x)))^2/(1 + E^((2*I)*(e
+ f*x)))]*((-I)*f*x + 8*Log[1 - E^(I*(e + f*x))] - 3*Log[1 + E^((2*I)*(e +
f*x))])*Sqrt[Sec[e + f*x]]*(a*(1 + Sec[e + f*x]))^(5/2)*Sin[e/2 + (f*x)/2])
/((1 + E^(I*(e + f*x)))*Sqrt[E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x)))]*f*(
1 + Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]]) + (Sec[e + f*x]*Sqrt[(1 +
 Cos[e + f*x])*Sec[e + f*x]]*(a*(1 + Sec[e + f*x]))^(5/2)*Tan[e/2 + (f*x)/2
])/(f*(1 + Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{c\sec\left(fx+e\right)-c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral(-(a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*sqrt(a*sec(f*x +
e) + a)*sqrt(-c*sec(f*x + e) + c)/(c*sec(f*x + e) - c), 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+a*sec(f*x+e))^(5/2)/(c-c*sec(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)
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)Warning, integrati
on of abs or sign assumes constant sign by intervals (correct if the argume
nt is real):Check [abs(cos(f*x+exp(1)))]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
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nable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)
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>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/
2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assumi
ng -2*a+a is positive. Hint: run assume to make assumptions on a variableWa
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```
rning, assuming -2*a+a is positive. Hint: run assume to make assumptions on
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to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4
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```
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g, integration of abs or sign assumes constant sign by intervals (correct i
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s or sign assumes constant sign by intervals (correct if the argument is re
al):Check [abs(t_nostep),abs(t_nostep^2-1)]Warning, integration of abs or s
ign assumes constant sign by intervals (correct if the argument is real):Ch
eck [abs(t_nostep)]Sign error (%%%{-a,0%%%}+%%%{1,2%%%})Sign error (%%%{-2*
a,0%%%}+%%%{1,2%%%})Evaluation time: 2.92Limit: Max order reached or unable
 to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.06, size = 184, normalized size = 1.21

$$-\frac{\left(8\ln\left(-\frac{-1+\cos(fx+e)}{\sin(fx+e)}\right)\cos\left(fx+e\right)-3\cos\left(fx+e\right)\ln\left(-\frac{-1+\cos(fx+e)+\sin(fx+e)}{\sin(fx+e)}\right)-3\cos\left(fx+e\right)\ln\left(-\frac{-\sin(fx+e}{\sin}\right.\right.}{f\sin\left(fx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(8*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)-3*cos(f*x+e)*ln(-(-1+cos
(f*x+e)+sin(f*x+e))/sin(f*x+e))-3*cos(f*x+e)*ln(-(-sin(f*x+e)-1+cos(f*x+e))
/sin(f*x+e))-cos(f*x+e)*ln(2/(1+cos(f*x+e)))+cos(f*x+e)+1)*(a*(1+cos(f*x+e)
)/cos(f*x+e))^(1/2)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/c*a^2
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

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

$$\int \frac{\left(a+\frac{a}{\cos(e+f\,x)}\right)^{5/2}}{\sqrt{c-\frac{c}{\cos(e+f\,x)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^(1/2),x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/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((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(1/2),x)
[Out] Timed out
```

3.105 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{a^3\tan(e+fx)\log(\cos(e+fx))}{cf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{4a^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}$$

```
[Out] -4*a^3*tan(f*x+e)/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a^3*ln(co
s(f*x+e))*tan(f*x+e)/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {3910, 3905, 3475}

$$\frac{a^3\tan(e+fx)\log(\cos(e+fx))}{cf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{4a^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (-4*a^3*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2
)) + (a^3*Log[Cos[e + f*x]]*Tan[e + f*x])/(c*f*Sqrt[a + a*Sec[e + f*x]]*Sqr
t[c - c*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3910

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(5/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-8*a^3*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a^2/c^2, Int[Sqrt
[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{3/2}}\,dx &= -\frac{4a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{a^2\int\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\,\mathrm{se}}}{c^2}\\ &= -\frac{4a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}-\frac{\left(a^3\tan(e+fx)\right)\int\tan(e+fx}{c\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e}}\\ &= -\frac{4a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}+\frac{a^3\log(\cos(e+fx))\tan(e+}{cf\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(}}\end{aligned}$$

Mathematica [C] time = 1.29, size = 111, normalized size = 1.16

$$\frac{a^2\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(-\log\left(1+e^{2i(e+fx)}\right)+\left(\log\left(1+e^{2i(e+fx)}\right)-ifx\right)\cos(e+fx)+ifx-4\right)}{cf(\cos(e+fx)-1)\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(3/2),x]
```

```
[Out] (a^2*(-4 + I*f*x - Log[1 + E^((2*I)*(e + f*x))] + Cos[e + f*x]*((-I)*f*x +
Log[1 + E^((2*I)*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])
/(c*f*(-1 + Cos[e + f*x])*Sqrt[c - c*Sec[e + f*x]])
```

fricas [B] time = 0.58, size = 442, normalized size = 4.60

$$\left[\frac{\left(a^2c\cos\left(fx+e\right)-a^2c\right)\sqrt{-\frac{a}{c}}\log\left(\frac{a\cos\left(fx+e\right)^4-\left(\cos\left(fx+e\right)^3+\cos\left(fx+e\right)\right)\sqrt{-\frac{a}{c}}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)+a}{2\cos\left(fx+e\right)^2}\right)\sin\left(fx\right.}{2\left(c^2f\cos\left(fx+e\right)-c^2f\right)\sin\left(fx+e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] [1/2*((a^2*c*cos(f*x + e) - a^2*c)*sqrt(-a/c)*log(1/2*(a*cos(f*x + e)^4 - (
cos(f*x + e)^3 + cos(f*x + e))*sqrt(-a/c)*sqrt((a*cos(f*x + e) + a)/cos(f*x
 + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + a)/cos(f*x +
e)^2)*sin(f*x + e) + 4*(a^2*cos(f*x + e)^2 + a^2*cos(f*x + e))*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e)))/((c^2*
f*cos(f*x + e) - c^2*f)*sin(f*x + e)), ((a^2*c*cos(f*x + e) - a^2*c)*sqrt(a
/c)*arctan(sqrt(a/c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*
x + e) - c)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(a*cos(f*x + e)^2 + a))
*sin(f*x + e) + 2*(a^2*cos(f*x + e)^2 + a^2*cos(f*x + e))*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e)))/((c^2*f*cos
(f*x + e) - c^2*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+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [B] time = 2.26, size = 239, normalized size = 2.49

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(\cos\left(fx+e\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+\cos\left(fx+e\right)\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-\cos\left(\right.\right.}{f\cos\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/f*(-1+cos(f*x+e))*(cos(f*x+e)*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))
+cos(f*x+e)*ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))-cos(f*x+e)*ln(2/(1+c
os(f*x+e)))-ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))-ln(-(-sin(f*x+e)-1+c
os(f*x+e))/sin(f*x+e))-2*cos(f*x+e)+ln(2/(1+cos(f*x+e)))-2)*(a*(1+cos(f*x+e
))/cos(f*x+e))^(1/2)/cos(f*x+e)/(c*(-1+cos(f*x+e))/cos(f*x+e))^(3/2)/sin(f*
x+e)*a^2
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/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((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.106 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=100

$$\frac{a^3\tan(e+fx)\log(1-\cos(e+fx))}{c^2f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{2a^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{5/2}}$$

```
[Out] -2*a^3*tan(f*x+e)/f/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2)+a^3*ln(1-
cos(f*x+e))*tan(f*x+e)/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3910, 3911, 31}

$$\frac{a^3\tan(e+fx)\log(1-\cos(e+fx))}{c^2f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{2a^3\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] (-2*a^3*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5/2
)) + (a^3*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^2*f*Sqrt[a + a*Sec[e + f*x
]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3910

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(5/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-8*a^3*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a^2/c^2, Int[Sqrt
[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{5/2}}\,dx &= -\frac{2a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}}+\frac{a^2\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c-c\sec(e+fx)}}\,dx}{c^2}\\ &= -\frac{2a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}}+\frac{\left(a^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{-c+cx}\,dx,\right.}{cf\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\,\text{se}}}\\ &= -\frac{2a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}}+\frac{a^3\log(1-\cos(e+fx))\tan(e+f}{c^2f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e}}\end{aligned}$$

Mathematica [C] time = 1.39, size = 155, normalized size = 1.55

$$\frac{a^2\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(6\log\left(1-e^{i(e+fx)}\right)+\left(-8\log\left(1-e^{i(e+fx)}\right)+4ifx-8\right)\cos(e+fx)+\left(\right.}{2c^2f(\cos(e+fx)-1)^2\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(5/2),x]
```

```
[Out] (a^2*(4 - (3*I)*f*x + Cos[e + f*x]*(-8 + (4*I)*f*x - 8*Log[1 - E^(I*(e + f*
x))]) + 6*Log[1 - E^(I*(e + f*x))] + Cos[2*(e + f*x)]*((-I)*f*x + 2*Log[1 -
 E^(I*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e + f*x)/2])/(2*c^2*f*(
-1 + Cos[e + f*x])^2*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\left(a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{c^3\sec\left(fx+e\right)^3-3\,c^3\sec\left(fx+e\right)^2+3\,c^3\sec\left(fx+e\right)-c^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral(-(a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*sqrt(a*sec(f*x +
e) + a)*sqrt(-c*sec(f*x + e) + c)/(c^3*sec(f*x + e)^3 - 3*c^3*sec(f*x + e)^
2 + 3*c^3*sec(f*x + e) - c^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((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [B] time = 2.25, size = 229, normalized size = 2.29

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(4\left(\cos^2\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-2\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)-3\left(\cos^2\left(fx+\right.\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/2/f*(-1+cos(f*x+e))*(4*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-2*ln
(2/(1+cos(f*x+e)))*cos(f*x+e)^2-3*cos(f*x+e)^2-8*ln(-(-1+cos(f*x+e))/sin(f*
x+e))*cos(f*x+e)+4*cos(f*x+e)*ln(2/(1+cos(f*x+e)))-2*cos(f*x+e)+4*ln(-(-1+c
os(f*x+e))/sin(f*x+e))-2*ln(2/(1+cos(f*x+e)))+1)*(a*(1+cos(f*x+e))/cos(f*x+
e))^(1/2)/(c*(-1+cos(f*x+e))/cos(f*x+e))^(5/2)/sin(f*x+e)/cos(f*x+e)^2*a^2
```

maxima [A] time = 0.57, size = 139, normalized size = 1.39

$$\frac{\frac{4\sqrt{-a}\,a^2\log\left(\frac{\sin\left(fx+e\right)}{\cos\left(fx+e\right)+1}\right)}{c^{\frac{5}{2}}}-\frac{2\sqrt{-a}\,a^2\log\left(\frac{\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}+1\right)}{c^{\frac{5}{2}}}-\frac{\left(\sqrt{-a}\,a^2\sqrt{c}-\frac{2\sqrt{-a}\,a^2\sqrt{c}\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}\right)\left(\cos\left(fx+e\right)+1\right)^4}{c^3\sin\left(fx+e\right)^4}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/2*(4*sqrt(-a)*a^2*log(sin(f*x + e)/(cos(f*x + e) + 1))/c^(5/2) - 2*sqrt(-
a)*a^2*log(sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)/c^(5/2) - (sqrt(-a)*a^2
*sqrt(c) - 2*sqrt(-a)*a^2*sqrt(c)*sin(f*x + e)^2/(cos(f*x + e) + 1)^2)*(cos
(f*x + e) + 1)^4/(c^3*sin(f*x + e)^4))/f
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^(5/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/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((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.107 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=148

$$\frac{a^3\tan(e+fx)\log(1-\cos(e+fx))}{c^3f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a^3\tan(e+fx)}{c^2f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{4a^3\tan}{3f\sqrt{a\sec(e+fx)+}}$$

```
[Out] -4/3*a^3*tan(f*x+e)/f/(c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(1/2)-a^3*tan
(f*x+e)/c^2/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a^3*ln(1-cos(f*
x+e))*tan(f*x+e)/c^3/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3910, 3907, 3911, 31}

$$-\frac{a^3\tan(e+fx)}{c^2f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}+\frac{a^3\tan(e+fx)\log(1-\cos(e+fx))}{c^3f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{4a^3\tan}{3f\sqrt{a\sec(e+fx)-}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] (-4*a^3*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(7
/2)) - (a^3*Tan[e + f*x])/(c^2*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*
x])^(3/2)) + (a^3*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^3*f*Sqrt[a + a*Sec
[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3910

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(5/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-8*a^3*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a^2/c^2, Int[Sqrt
[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{7/2}}\,dx = -\frac{4a^3\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} + \frac{a^2\int \frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{3/2}}\,dx}{c^2}$$

$$= -\frac{4a^3\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a^3\tan(e+fx)}{c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e-$$

$$= -\frac{4a^3\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a^3\tan(e+fx)}{c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e-$$

$$= -\frac{4a^3\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{7/2}} - \frac{a^3\tan(e+fx)}{c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e-$$

Mathematica [C] time = 2.67, size = 202, normalized size = 1.36

$$\frac{a^2\tan\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(-60\log\left(1-e^{i(e+fx)}\right)-3ifx\cos(3(e+fx))+6i\left(6i\log\left(1-e^{i(e+fx)}\right)+3\right.}{12c^3f(\cos(e+f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(7/2),x]
```

```
[Out] (a^2*(-58 + (30*I)*f*x - (3*I)*f*x*Cos[3*(e + f*x)] + (6*I)*Cos[2*(e + f*x)
]*(5*I + 3*f*x + (6*I)*Log[1 - E^(I*(e + f*x))]) - 60*Log[1 - E^(I*(e + f*x
))] + 6*Cos[3*(e + f*x)]*Log[1 - E^(I*(e + f*x))] + 9*Cos[e + f*x]*(8 - (5*
I)*f*x + 10*Log[1 - E^(I*(e + f*x))]))*Sqrt[a*(1 + Sec[e + f*x])]*Tan[(e +
f*x)/2])/(12*c^3*f*(-1 + Cos[e + f*x])^3*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{c^4\sec\left(fx+e\right)^4-4\,c^4\sec\left(fx+e\right)^3+6\,c^4\sec\left(fx+e\right)^2-4\,c^4\sec\left(fx+e\right)+c^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="frica
s")
```

```
[Out] integral((a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*sqrt(a*sec(f*x + e
) + a)*sqrt(-c*sec(f*x + e) + c)/(c^4*sec(f*x + e)^4 - 4*c^4*sec(f*x + e)^3
 + 6*c^4*sec(f*x + e)^2 - 4*c^4*sec(f*x + e) + c^4), 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+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [B] time = 2.37, size = 281, normalized size = 1.90

$$\left(-1+\cos\left(fx+e\right)\right)\left(3\left(\cos^{3}\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-6\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^{3}\left(fx+e\right)\right)-9\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(7/2),x)
```

```
[Out] 1/3/f*(-1+cos(f*x+e))*(3*cos(f*x+e)^3*ln(2/(1+cos(f*x+e)))-6*ln(-(-1+cos(f*
x+e))/sin(f*x+e))*cos(f*x+e)^3-9*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+5*cos(f*
x+e)^3+18*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))+9*cos(f*x+e)*ln(2/(1
+cos(f*x+e)))-18*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)-3*ln(2/(1+cos(f
*x+e)))-3*cos(f*x+e)+6*ln(-(-1+cos(f*x+e))/sin(f*x+e))+2)*(a*(1+cos(f*x+e))
/cos(f*x+e))^(1/2)/(c*(-1+cos(f*x+e))/cos(f*x+e))^(7/2)/sin(f*x+e)/cos(f*x+
e)^3*a^2
```

maxima [B] time = 4.40, size = 3738, normalized size = 25.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(7/2),x, algorithm="maxim
a")
```

```
[Out] -1/3*(3*(f*x + e)*a^2*cos(6*f*x + 6*e)^2 + 675*(f*x + e)*a^2*cos(4*f*x + 4*
e)^2 + 675*(f*x + e)*a^2*cos(2*f*x + 2*e)^2 + 108*(f*x + e)*a^2*cos(5/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 1200*(f*x + e)*a^2*cos(3/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 108*(f*x + e)*a^2*cos(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 3*(f*x + e)*a^2*sin(6*f*x +
6*e)^2 + 675*(f*x + e)*a^2*sin(4*f*x + 4*e)^2 + 675*(f*x + e)*a^2*sin(2*f*x
 + 2*e)^2 + 108*(f*x + e)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 + 1200*(f*x + e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e)))^2 + 108*(f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e)))^2 + 90*(f*x + e)*a^2*cos(2*f*x + 2*e) + 3*(f*x + e)*a^2 - 72*a^2*s
in(2*f*x + 2*e) - 6*(a^2*cos(6*f*x + 6*e)^2 + 225*a^2*cos(4*f*x + 4*e)^2 +
225*a^2*cos(2*f*x + 2*e)^2 + 36*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e)))^2 + 400*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + 36*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + a^2
*sin(6*f*x + 6*e)^2 + 225*a^2*sin(4*f*x + 4*e)^2 + 450*a^2*sin(4*f*x + 4*e)
*sin(2*f*x + 2*e) + 225*a^2*sin(2*f*x + 2*e)^2 + 36*a^2*sin(5/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 400*a^2*sin(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e)))^2 + 36*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e)))^2 + 30*a^2*cos(2*f*x + 2*e) + a^2 + 2*(15*a^2*cos(4*f*x + 4*e)
 + 15*a^2*cos(2*f*x + 2*e) + a^2)*cos(6*f*x + 6*e) + 30*(15*a^2*cos(2*f*x +
 2*e) + a^2)*cos(4*f*x + 4*e) - 12*(a^2*cos(6*f*x + 6*e) + 15*a^2*cos(4*f*x
 + 4*e) + 15*a^2*cos(2*f*x + 2*e) - 20*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) - 6*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + a^2)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 40*(a^
2*cos(6*f*x + 6*e) + 15*a^2*cos(4*f*x + 4*e) + 15*a^2*cos(2*f*x + 2*e) - 6*
a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a^2)*cos(3/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 12*(a^2*cos(6*f*x + 6*e) + 15*a
^2*cos(4*f*x + 4*e) + 15*a^2*cos(2*f*x + 2*e) + a^2)*cos(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 30*(a^2*sin(4*f*x + 4*e) + a^2*sin(2*f*x +
 2*e))*sin(6*f*x + 6*e) - 12*(a^2*sin(6*f*x + 6*e) + 15*a^2*sin(4*f*x + 4*e
) + 15*a^2*sin(2*f*x + 2*e) - 20*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(
```

```
2*f*x + 2*e))) - 6*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
)*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 40*(a^2*sin(6*f*x
+ 6*e) + 15*a^2*sin(4*f*x + 4*e) + 15*a^2*sin(2*f*x + 2*e) - 6*a^2*sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 12*(a^2*sin(6*f*x + 6*e) + 15*a^2*sin(4*f*x + 4*e
) + 15*a^2*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))))*arctan2(sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1) + 6*(15*(f*x + e)*a^2*
cos(4*f*x + 4*e) + 15*(f*x + e)*a^2*cos(2*f*x + 2*e) + (f*x + e)*a^2 - 12*a
^2*sin(4*f*x + 4*e) - 12*a^2*sin(2*f*x + 2*e))*cos(6*f*x + 6*e) + 90*(15*(f
*x + e)*a^2*cos(2*f*x + 2*e) + (f*x + e)*a^2)*cos(4*f*x + 4*e) - 6*(6*(f*x
+ e)*a^2*cos(6*f*x + 6*e) + 90*(f*x + e)*a^2*cos(4*f*x + 4*e) + 90*(f*x + e
)*a^2*cos(2*f*x + 2*e) - 120*(f*x + e)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) - 36*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 6*(f*x + e)*a^2 + 5*a^2*sin(6*f*x + 6*e) + 3*a^2*sin(4*
f*x + 4*e) + 3*a^2*sin(2*f*x + 2*e) + 16*a^2*sin(3/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))))*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) - 4*(30*(f*x + e)*a^2*cos(6*f*x + 6*e) + 450*(f*x + e)*a^2*cos(4*f*x + 4*
e) + 450*(f*x + e)*a^2*cos(2*f*x + 2*e) - 180*(f*x + e)*a^2*cos(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 30*(f*x + e)*a^2 + 29*a^2*sin(6*f*x
 + 6*e) + 75*a^2*sin(4*f*x + 4*e) + 75*a^2*sin(2*f*x + 2*e) - 24*a^2*sin(1/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(3/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) - 6*(6*(f*x + e)*a^2*cos(6*f*x + 6*e) + 90*(f*x +
 e)*a^2*cos(4*f*x + 4*e) + 90*(f*x + e)*a^2*cos(2*f*x + 2*e) + 6*(f*x + e)*
a^2 + 5*a^2*sin(6*f*x + 6*e) + 3*a^2*sin(4*f*x + 4*e) + 3*a^2*sin(2*f*x + 2
*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 18*(5*(f*x + e)
*a^2*sin(4*f*x + 4*e) + 5*(f*x + e)*a^2*sin(2*f*x + 2*e) + 4*a^2*cos(4*f*x
+ 4*e) + 4*a^2*cos(2*f*x + 2*e))*sin(6*f*x + 6*e) + 18*(75*(f*x + e)*a^2*si
n(2*f*x + 2*e) - 4*a^2)*sin(4*f*x + 4*e) - 6*(6*(f*x + e)*a^2*sin(6*f*x + 6
*e) + 90*(f*x + e)*a^2*sin(4*f*x + 4*e) + 90*(f*x + e)*a^2*sin(2*f*x + 2*e)
 - 120*(f*x + e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) -
 36*(f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 5*
a^2*cos(6*f*x + 6*e) - 3*a^2*cos(4*f*x + 4*e) - 3*a^2*cos(2*f*x + 2*e) - 16
*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 5*a^2)*sin(5/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(30*(f*x + e)*a^2*sin(6*f*
x + 6*e) + 450*(f*x + e)*a^2*sin(4*f*x + 4*e) + 450*(f*x + e)*a^2*sin(2*f*x
 + 2*e) - 180*(f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) - 29*a^2*cos(6*f*x + 6*e) - 75*a^2*cos(4*f*x + 4*e) - 75*a^2*cos(2*f*
x + 2*e) + 24*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 29
*a^2)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 6*(6*(f*x + e)
*a^2*sin(6*f*x + 6*e) + 90*(f*x + e)*a^2*sin(4*f*x + 4*e) + 90*(f*x + e)*a^
2*sin(2*f*x + 2*e) - 5*a^2*cos(6*f*x + 6*e) - 3*a^2*cos(4*f*x + 4*e) - 3*a^
2*cos(2*f*x + 2*e) - 5*a^2)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))))*sqrt(a)*sqrt(c)/((c^4*cos(6*f*x + 6*e)^2 + 225*c^4*cos(4*f*x + 4*e)^
2 + 225*c^4*cos(2*f*x + 2*e)^2 + 36*c^4*cos(5/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e)))^2 + 400*c^4*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 + 36*c^4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
 c^4*sin(6*f*x + 6*e)^2 + 225*c^4*sin(4*f*x + 4*e)^2 + 450*c^4*sin(4*f*x +
4*e)*sin(2*f*x + 2*e) + 225*c^4*sin(2*f*x + 2*e)^2 + 36*c^4*sin(5/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 400*c^4*sin(3/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e)))^2 + 36*c^4*sin(1/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e)))^2 + 30*c^4*cos(2*f*x + 2*e) + c^4 + 2*(15*c^4*cos(4*f*x +
4*e) + 15*c^4*cos(2*f*x + 2*e) + c^4)*cos(6*f*x + 6*e) + 30*(15*c^4*cos(2*f
*x + 2*e) + c^4)*cos(4*f*x + 4*e) - 12*(c^4*cos(6*f*x + 6*e) + 15*c^4*cos(4
*f*x + 4*e) + 15*c^4*cos(2*f*x + 2*e) - 20*c^4*cos(3/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - 6*c^4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + c^4)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 40
*(c^4*cos(6*f*x + 6*e) + 15*c^4*cos(4*f*x + 4*e) + 15*c^4*cos(2*f*x + 2*e)
- 6*c^4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + c^4)*cos(3/2
```

```
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 12*(c^4*cos(6*f*x + 6*e) +
15*c^4*cos(4*f*x + 4*e) + 15*c^4*cos(2*f*x + 2*e) + c^4)*cos(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + 30*(c^4*sin(4*f*x + 4*e) + c^4*sin(2*f
*x + 2*e))*sin(6*f*x + 6*e) - 12*(c^4*sin(6*f*x + 6*e) + 15*c^4*sin(4*f*x +
 4*e) + 15*c^4*sin(2*f*x + 2*e) - 20*c^4*sin(3/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) - 6*c^4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))))*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 40*(c^4*sin(6*
f*x + 6*e) + 15*c^4*sin(4*f*x + 4*e) + 15*c^4*sin(2*f*x + 2*e) - 6*c^4*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) - 12*(c^4*sin(6*f*x + 6*e) + 15*c^4*sin(4*f*x +
 4*e) + 15*c^4*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))))*f)
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^(7/2),x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/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((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(7/2),x)
[Out] Timed out
```

3.108 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=194

$$\frac{a^3\tan(e+fx)\log(1-\cos(e+fx))}{c^4f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{a^3\tan(e+fx)}{c^3f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a^3\tan(e}{2c^2f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] -a^3*tan(f*x+e)/f/(c-c*sec(f*x+e))^(9/2)/(a+a*sec(f*x+e))^(1/2)-1/2*a^3*tan
(f*x+e)/c^2/f/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2)-a^3*tan(f*x+e)/
c^3/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a^3*ln(1-cos(f*x+e))*ta
n(f*x+e)/c^4/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3910, 3907, 3911, 31}

$$-\frac{a^3\tan(e+fx)}{c^3f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a^3\tan(e+fx)}{2c^2f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{5/2}}+\frac{a^3\tan(e+fx)\,l}{c^4f\sqrt{a\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(9/2),x]
```

```
[Out] -((a^3*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(9/2)
)) - (a^3*Tan[e + f*x])/(2*c^2*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*
x])^(5/2)) - (a^3*Tan[e + f*x])/(c^3*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[
e + f*x])^(3/2)) + (a^3*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^4*f*Sqrt[a +
 a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3910

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(5/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-8*a^3*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a^2/c^2, Int[Sqrt
[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{9/2}}\,dx = -\frac{a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{9/2}} + \frac{a^2\int\frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{5/2}}\,dx}{c^2}$$

$$= -\frac{a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{9/2}} - \frac{a^3\tan(e+fx)}{2c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{9/2}} - \frac{a^3\tan(e+fx)}{2c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{9/2}} - \frac{a^3\tan(e+fx)}{2c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

$$= -\frac{a^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{9/2}} - \frac{a^3\tan(e+fx)}{2c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\sec}$$

Mathematica [C] time = 5.50, size = 285, normalized size = 1.47

$$\frac{\sin^9\left(\frac{1}{2}(e+fx)\right)\sec^{\frac{9}{2}}(e+fx)(a(\sec(e+fx)+1))^{5/2}\left(\frac{(89\cos(e+fx)-60\cos(2(e+fx))+23\cos(3(e+fx))-6\cos(4(e+fx))-54)\csc^8(}{8f}\right.}{(\sec(e+fx)+1)^{5/2}(c-c\sec(e+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(9/2),x]
```

```
[Out] (Sec[e + f*x]^(9/2)*(a*(1 + Sec[e + f*x]))^(5/2)*((16*Sqrt[2]*E^((I/2)*(e +
 f*x))*Sqrt[(1 + E^(I*(e + f*x)))^2/(1 + E^((2*I)*(e + f*x)))]*((-I)*f*x +
2*Log[1 - E^(I*(e + f*x))]))/((1 + E^(I*(e + f*x)))*Sqrt[E^(I*(e + f*x))/(1
 + E^((2*I)*(e + f*x)))]*f) + ((-54 + 89*Cos[e + f*x] - 60*Cos[2*(e + f*x)]
 + 23*Cos[3*(e + f*x)] - 6*Cos[4*(e + f*x)])*Csc[(e + f*x)/2]^8*Sec[(e + f*
x)/2]*Sqrt[Sec[e + f*x]]*Sqrt[1 + Sec[e + f*x]])/(8*f))*Sin[(e + f*x)/2]^9)
/((1 + Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(9/2))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{c^5\sec\left(fx+e\right)^5-5\,c^5\sec\left(fx+e\right)^4+10\,c^5\sec\left(fx+e\right)^3-10\,c^5\sec\left(fx+e\right)^2+5\,c^5\sec\left(fx+e\right)-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(9/2),x, algorithm="frica
s")
```

```
[Out] integral(-(a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*sqrt(a*sec(f*x +
e) + a)*sqrt(-c*sec(f*x + e) + c)/(c^5*sec(f*x + e)^5 - 5*c^5*sec(f*x + e)^
4 + 10*c^5*sec(f*x + e)^3 - 10*c^5*sec(f*x + e)^2 + 5*c^5*sec(f*x + e) - c^
5), 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+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(9/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [A] time = 2.35, size = 353, normalized size = 1.82

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(32\left(\cos^{4}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-16\left(\cos^{4}\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-29\left(\cos^{4}\left(fx+\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(9/2),x)
```

```
[Out] -1/16/f*(-1+cos(f*x+e))*(32*cos(f*x+e)^4*ln(-(-1+cos(f*x+e))/sin(f*x+e))-16
*cos(f*x+e)^4*ln(2/(1+cos(f*x+e)))-29*cos(f*x+e)^4-128*ln(-(-1+cos(f*x+e))/
sin(f*x+e))*cos(f*x+e)^3+64*cos(f*x+e)^3*ln(2/(1+cos(f*x+e)))+20*cos(f*x+e)
^3+192*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-96*ln(2/(1+cos(f*x+e)))
*cos(f*x+e)^2+10*cos(f*x+e)^2-128*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e
)+64*cos(f*x+e)*ln(2/(1+cos(f*x+e)))-28*cos(f*x+e)+32*ln(-(-1+cos(f*x+e))/s
in(f*x+e))-16*ln(2/(1+cos(f*x+e)))+11)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/
sin(f*x+e)/cos(f*x+e)^4/(c*(-1+cos(f*x+e))/cos(f*x+e))^(9/2)*a^2
```

maxima [B] time = 24.80, size = 6134, normalized size = 31.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(9/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*a^2*cos(8*f*x + 8*e)^2 + 784*(f*x + e)*a^2*cos(6*f*x + 6*e)^2 +
 4900*(f*x + e)*a^2*cos(4*f*x + 4*e)^2 + 784*(f*x + e)*a^2*cos(2*f*x + 2*e)
^2 + 64*(f*x + e)*a^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^
2 + 3136*(f*x + e)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
^2 + 3136*(f*x + e)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 64*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
^2 + (f*x + e)*a^2*sin(8*f*x + 8*e)^2 + 784*(f*x + e)*a^2*sin(6*f*x + 6*e)^
2 + 4900*(f*x + e)*a^2*sin(4*f*x + 4*e)^2 + 784*(f*x + e)*a^2*sin(2*f*x + 2
*e)^2 + 64*(f*x + e)*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
))^2 + 3136*(f*x + e)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + 3136*(f*x + e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))^2 + 64*(f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + 56*(f*x + e)*a^2*cos(2*f*x + 2*e) + (f*x + e)*a^2 - 46*a^2*sin(2*f*
x + 2*e) - 2*(a^2*cos(8*f*x + 8*e)^2 + 784*a^2*cos(6*f*x + 6*e)^2 + 4900*a^
2*cos(4*f*x + 4*e)^2 + 784*a^2*cos(2*f*x + 2*e)^2 + 64*a^2*cos(7/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 3136*a^2*cos(5/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e)))^2 + 3136*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e)))^2 + 64*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 + a^2*sin(8*f*x + 8*e)^2 + 784*a^2*sin(6*f*x + 6*e)^2 + 4900*a^2*
sin(4*f*x + 4*e)^2 + 3920*a^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 784*a^2*s
in(2*f*x + 2*e)^2 + 64*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))^2 + 3136*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
3136*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 64*a^2*si
n(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 56*a^2*cos(2*f*x + 2
```

```
*e) + a^2 + 2*(28*a^2*cos(6*f*x + 6*e) + 70*a^2*cos(4*f*x + 4*e) + 28*a^2*c
os(2*f*x + 2*e) + a^2)*cos(8*f*x + 8*e) + 56*(70*a^2*cos(4*f*x + 4*e) + 28*
a^2*cos(2*f*x + 2*e) + a^2)*cos(6*f*x + 6*e) + 140*(28*a^2*cos(2*f*x + 2*e)
 + a^2)*cos(4*f*x + 4*e) - 16*(a^2*cos(8*f*x + 8*e) + 28*a^2*cos(6*f*x + 6*
e) + 70*a^2*cos(4*f*x + 4*e) + 28*a^2*cos(2*f*x + 2*e) - 56*a^2*cos(5/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 56*a^2*cos(3/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) - 8*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + a^2)*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
- 112*(a^2*cos(8*f*x + 8*e) + 28*a^2*cos(6*f*x + 6*e) + 70*a^2*cos(4*f*x +
4*e) + 28*a^2*cos(2*f*x + 2*e) - 56*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) - 8*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) + a^2)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 112*(a^2*
cos(8*f*x + 8*e) + 28*a^2*cos(6*f*x + 6*e) + 70*a^2*cos(4*f*x + 4*e) + 28*a
^2*cos(2*f*x + 2*e) - 8*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + a^2)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16*(a^2
*cos(8*f*x + 8*e) + 28*a^2*cos(6*f*x + 6*e) + 70*a^2*cos(4*f*x + 4*e) + 28*
a^2*cos(2*f*x + 2*e) + a^2)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 28*(2*a^2*sin(6*f*x + 6*e) + 5*a^2*sin(4*f*x + 4*e) + 2*a^2*sin(2*f
*x + 2*e))*sin(8*f*x + 8*e) + 784*(5*a^2*sin(4*f*x + 4*e) + 2*a^2*sin(2*f*x
 + 2*e))*sin(6*f*x + 6*e) - 16*(a^2*sin(8*f*x + 8*e) + 28*a^2*sin(6*f*x + 6
*e) + 70*a^2*sin(4*f*x + 4*e) + 28*a^2*sin(2*f*x + 2*e) - 56*a^2*sin(5/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 56*a^2*sin(3/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))) - 8*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))))*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 112
*(a^2*sin(8*f*x + 8*e) + 28*a^2*sin(6*f*x + 6*e) + 70*a^2*sin(4*f*x + 4*e)
+ 28*a^2*sin(2*f*x + 2*e) - 56*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) - 8*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*
sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 112*(a^2*sin(8*f*x +
 8*e) + 28*a^2*sin(6*f*x + 6*e) + 70*a^2*sin(4*f*x + 4*e) + 28*a^2*sin(2*f*
x + 2*e) - 8*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(
3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16*(a^2*sin(8*f*x + 8*e)
 + 28*a^2*sin(6*f*x + 6*e) + 70*a^2*sin(4*f*x + 4*e) + 28*a^2*sin(2*f*x + 2
*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*arctan2(sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 1) + 2*(28*(f*x + e)*a^2*cos(6*f*x + 6*e) + 70*(f
*x + e)*a^2*cos(4*f*x + 4*e) + 28*(f*x + e)*a^2*cos(2*f*x + 2*e) + (f*x + e
)*a^2 - 23*a^2*sin(6*f*x + 6*e) - 66*a^2*sin(4*f*x + 4*e) - 23*a^2*sin(2*f*
x + 2*e))*cos(8*f*x + 8*e) + 28*(140*(f*x + e)*a^2*cos(4*f*x + 4*e) + 56*(f
*x + e)*a^2*cos(2*f*x + 2*e) + 2*(f*x + e)*a^2 - 17*a^2*sin(4*f*x + 4*e))*c
os(6*f*x + 6*e) + 28*(140*(f*x + e)*a^2*cos(2*f*x + 2*e) + 5*(f*x + e)*a^2
+ 17*a^2*sin(2*f*x + 2*e))*cos(4*f*x + 4*e) - 4*(4*(f*x + e)*a^2*cos(8*f*x
+ 8*e) + 112*(f*x + e)*a^2*cos(6*f*x + 6*e) + 280*(f*x + e)*a^2*cos(4*f*x +
 4*e) + 112*(f*x + e)*a^2*cos(2*f*x + 2*e) - 224*(f*x + e)*a^2*cos(5/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 224*(f*x + e)*a^2*cos(3/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 32*(f*x + e)*a^2*cos(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*(f*x + e)*a^2 + 3*a^2*sin(8*f*x + 8
*e) - 8*a^2*sin(6*f*x + 6*e) - 54*a^2*sin(4*f*x + 4*e) - 8*a^2*sin(2*f*x +
2*e) + 48*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 48*a^2
*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(7/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(28*(f*x + e)*a^2*cos(8*f*x + 8*e) + 7
84*(f*x + e)*a^2*cos(6*f*x + 6*e) + 1960*(f*x + e)*a^2*cos(4*f*x + 4*e) + 7
84*(f*x + e)*a^2*cos(2*f*x + 2*e) - 1568*(f*x + e)*a^2*cos(3/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) - 224*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 28*(f*x + e)*a^2 + 27*a^2*sin(8*f*x + 8*e)
 + 112*a^2*sin(6*f*x + 6*e) + 42*a^2*sin(4*f*x + 4*e) + 112*a^2*sin(2*f*x +
 2*e) - 48*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(5/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(28*(f*x + e)*a^2*cos(8*
f*x + 8*e) + 784*(f*x + e)*a^2*cos(6*f*x + 6*e) + 1960*(f*x + e)*a^2*cos(4*
f*x + 4*e) + 784*(f*x + e)*a^2*cos(2*f*x + 2*e) - 224*(f*x + e)*a^2*cos(1/2
```

```
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 28*(f*x + e)*a^2 + 27*a^2*s
in(8*f*x + 8*e) + 112*a^2*sin(6*f*x + 6*e) + 42*a^2*sin(4*f*x + 4*e) + 112*
a^2*sin(2*f*x + 2*e) - 48*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(4*(f*x +
 e)*a^2*cos(8*f*x + 8*e) + 112*(f*x + e)*a^2*cos(6*f*x + 6*e) + 280*(f*x +
e)*a^2*cos(4*f*x + 4*e) + 112*(f*x + e)*a^2*cos(2*f*x + 2*e) + 4*(f*x + e)*
a^2 + 3*a^2*sin(8*f*x + 8*e) - 8*a^2*sin(6*f*x + 6*e) - 54*a^2*sin(4*f*x +
4*e) - 8*a^2*sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e))) + 2*(28*(f*x + e)*a^2*sin(6*f*x + 6*e) + 70*(f*x + e)*a^2*sin(4*f*
x + 4*e) + 28*(f*x + e)*a^2*sin(2*f*x + 2*e) + 23*a^2*cos(6*f*x + 6*e) + 66
*a^2*cos(4*f*x + 4*e) + 23*a^2*cos(2*f*x + 2*e))*sin(8*f*x + 8*e) + 2*(1960
*(f*x + e)*a^2*sin(4*f*x + 4*e) + 784*(f*x + e)*a^2*sin(2*f*x + 2*e) + 238*
a^2*cos(4*f*x + 4*e) - 23*a^2)*sin(6*f*x + 6*e) + 4*(980*(f*x + e)*a^2*sin(
2*f*x + 2*e) - 119*a^2*cos(2*f*x + 2*e) - 33*a^2)*sin(4*f*x + 4*e) - 4*(4*(
f*x + e)*a^2*sin(8*f*x + 8*e) + 112*(f*x + e)*a^2*sin(6*f*x + 6*e) + 280*(f
*x + e)*a^2*sin(4*f*x + 4*e) + 112*(f*x + e)*a^2*sin(2*f*x + 2*e) - 224*(f*
x + e)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 224*(f*x
+ e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 32*(f*x + e
)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 3*a^2*cos(8*f*
x + 8*e) + 8*a^2*cos(6*f*x + 6*e) + 54*a^2*cos(4*f*x + 4*e) + 8*a^2*cos(2*f
*x + 2*e) - 48*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4
8*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 3*a^2)*sin(7/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(28*(f*x + e)*a^2*sin(8*f
*x + 8*e) + 784*(f*x + e)*a^2*sin(6*f*x + 6*e) + 1960*(f*x + e)*a^2*sin(4*f
*x + 4*e) + 784*(f*x + e)*a^2*sin(2*f*x + 2*e) - 1568*(f*x + e)*a^2*sin(3/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 224*(f*x + e)*a^2*sin(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 27*a^2*cos(8*f*x + 8*e) - 112
*a^2*cos(6*f*x + 6*e) - 42*a^2*cos(4*f*x + 4*e) - 112*a^2*cos(2*f*x + 2*e)
+ 48*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 27*a^2)*sin
(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(28*(f*x + e)*a^2*sin
(8*f*x + 8*e) + 784*(f*x + e)*a^2*sin(6*f*x + 6*e) + 1960*(f*x + e)*a^2*sin
(4*f*x + 4*e) + 784*(f*x + e)*a^2*sin(2*f*x + 2*e) - 224*(f*x + e)*a^2*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 27*a^2*cos(8*f*x + 8*e)
- 112*a^2*cos(6*f*x + 6*e) - 42*a^2*cos(4*f*x + 4*e) - 112*a^2*cos(2*f*x +
2*e) + 48*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 27*a^2
)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(4*(f*x + e)*a^2
*sin(8*f*x + 8*e) + 112*(f*x + e)*a^2*sin(6*f*x + 6*e) + 280*(f*x + e)*a^2*
sin(4*f*x + 4*e) + 112*(f*x + e)*a^2*sin(2*f*x + 2*e) - 3*a^2*cos(8*f*x + 8
*e) + 8*a^2*cos(6*f*x + 6*e) + 54*a^2*cos(4*f*x + 4*e) + 8*a^2*cos(2*f*x +
2*e) - 3*a^2)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)
*sqrt(c)/((c^5*cos(8*f*x + 8*e)^2 + 784*c^5*cos(6*f*x + 6*e)^2 + 4900*c^5*c
os(4*f*x + 4*e)^2 + 784*c^5*cos(2*f*x + 2*e)^2 + 64*c^5*cos(7/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 3136*c^5*cos(5/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e)))^2 + 3136*c^5*cos(3/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e)))^2 + 64*c^5*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))^2 + c^5*sin(8*f*x + 8*e)^2 + 784*c^5*sin(6*f*x + 6*e)^2 + 4900*c^5*sin
(4*f*x + 4*e)^2 + 3920*c^5*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 784*c^5*sin(
2*f*x + 2*e)^2 + 64*c^5*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 3136*c^5*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 313
6*c^5*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 64*c^5*sin(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 56*c^5*cos(2*f*x + 2*e)
 + c^5 + 2*(28*c^5*cos(6*f*x + 6*e) + 70*c^5*cos(4*f*x + 4*e) + 28*c^5*cos(
2*f*x + 2*e) + c^5)*cos(8*f*x + 8*e) + 56*(70*c^5*cos(4*f*x + 4*e) + 28*c^5
*cos(2*f*x + 2*e) + c^5)*cos(6*f*x + 6*e) + 140*(28*c^5*cos(2*f*x + 2*e) +
c^5)*cos(4*f*x + 4*e) - 16*(c^5*cos(8*f*x + 8*e) + 28*c^5*cos(6*f*x + 6*e)
+ 70*c^5*cos(4*f*x + 4*e) + 28*c^5*cos(2*f*x + 2*e) - 56*c^5*cos(5/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 56*c^5*cos(3/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) - 8*c^5*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + c^5)*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1
```

```
12*(c^5*cos(8*f*x + 8*e) + 28*c^5*cos(6*f*x + 6*e) + 70*c^5*cos(4*f*x + 4*e
) + 28*c^5*cos(2*f*x + 2*e) - 56*c^5*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) - 8*c^5*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + c^5)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 112*(c^5*cos
(8*f*x + 8*e) + 28*c^5*cos(6*f*x + 6*e) + 70*c^5*cos(4*f*x + 4*e) + 28*c^5*
cos(2*f*x + 2*e) - 8*c^5*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + c^5)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16*(c^5*co
s(8*f*x + 8*e) + 28*c^5*cos(6*f*x + 6*e) + 70*c^5*cos(4*f*x + 4*e) + 28*c^5
*cos(2*f*x + 2*e) + c^5)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 28*(2*c^5*sin(6*f*x + 6*e) + 5*c^5*sin(4*f*x + 4*e) + 2*c^5*sin(2*f*x
+ 2*e))*sin(8*f*x + 8*e) + 784*(5*c^5*sin(4*f*x + 4*e) + 2*c^5*sin(2*f*x +
2*e))*sin(6*f*x + 6*e) - 16*(c^5*sin(8*f*x + 8*e) + 28*c^5*sin(6*f*x + 6*e)
 + 70*c^5*sin(4*f*x + 4*e) + 28*c^5*sin(2*f*x + 2*e) - 56*c^5*sin(5/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 56*c^5*sin(3/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e))) - 8*c^5*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))))*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 112*(c
^5*sin(8*f*x + 8*e) + 28*c^5*sin(6*f*x + 6*e) + 70*c^5*sin(4*f*x + 4*e) + 2
8*c^5*sin(2*f*x + 2*e) - 56*c^5*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) - 8*c^5*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin
(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 112*(c^5*sin(8*f*x + 8*
e) + 28*c^5*sin(6*f*x + 6*e) + 70*c^5*sin(4*f*x + 4*e) + 28*c^5*sin(2*f*x +
 2*e) - 8*c^5*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16*(c^5*sin(8*f*x + 8*e) +
28*c^5*sin(6*f*x + 6*e) + 70*c^5*sin(4*f*x + 4*e) + 28*c^5*sin(2*f*x + 2*e)
)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^(9/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/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((a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(9/2),x)
```

```
[Out] Timed out
```

3.109 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{11/2}}\,dx$

Optimal. Leaf size=244

$$\frac{a^3\tan(e+fx)\log(1-\cos(e+fx))}{c^5 f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{a^3\tan(e+fx)}{c^4 f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a^3\tan(e}{2c^3 f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] -4/5*a^3*tan(f*x+e)/f/(c-c*sec(f*x+e))^(11/2)/(a+a*sec(f*x+e))^(1/2)-1/3*a^
3*tan(f*x+e)/c^2/f/(c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(1/2)-1/2*a^3*ta
n(f*x+e)/c^3/f/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2)-a^3*tan(f*x+e)
/c^4/f/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2)+a^3*ln(1-cos(f*x+e))*t
an(f*x+e)/c^5/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.47, antiderivative size = 244, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$, Rules used = {3910, 3907, 3911, 31}

$$-\frac{a^3\tan(e+fx)}{c^4 f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{3/2}}-\frac{a^3\tan(e+fx)}{2c^3 f\sqrt{a\sec(e+fx)+a}\,(c-c\sec(e+fx))^{5/2}}-\frac{a^3 \mathrm{ta}}{3c^2 f\sqrt{a\sec(e+fx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(11/2),x]
```

```
[Out] (-4*a^3*Tan[e + f*x])/(5*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(1
1/2)) - (a^3*Tan[e + f*x])/(3*c^2*f*Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e +
 f*x])^(7/2)) - (a^3*Tan[e + f*x])/(2*c^3*f*Sqrt[a + a*Sec[e + f*x]]*(c - c
*Sec[e + f*x])^(5/2)) - (a^3*Tan[e + f*x])/(c^4*f*Sqrt[a + a*Sec[e + f*x]]*
(c - c*Sec[e + f*x])^(3/2)) + (a^3*Log[1 - Cos[e + f*x]]*Tan[e + f*x])/(c^5
*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3910

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(5/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-8*a^3*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a^2/c^2, Int[Sqrt
[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
```

```
[m + n, 0]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c-c\sec(e+fx))^{11/2}}\,dx = -\frac{4a^3\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{11/2}}+\frac{a^2\int\frac{\sqrt{a+a\sec(e+fx)}}{(c-c\sec(e+fx))^{7/2}}\,dx}{c^2}$$

$$= -\frac{4a^3\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{11/2}}-\frac{a^3\tan(e+fx)}{3c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\,\mathrm{s}}$$

$$= -\frac{4a^3\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{11/2}}-\frac{a^3\tan(e+fx)}{3c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\,\mathrm{s}}$$

$$= -\frac{4a^3\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{11/2}}-\frac{a^3\tan(e+fx)}{3c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\,\mathrm{s}}$$

$$= -\frac{4a^3\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{11/2}}-\frac{a^3\tan(e+fx)}{3c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\,\mathrm{s}}$$

$$= -\frac{4a^3\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{11/2}}-\frac{a^3\tan(e+fx)}{3c^2f\sqrt{a+a\sec(e+fx)}\,(c-c\,\mathrm{s}}$$

Mathematica [C] time = 5.99, size = 299, normalized size = 1.23

$$\frac{\sin^{11}\left(\frac{1}{2}(e+fx)\right)\sec^{\frac{11}{2}}(e+fx)(a(\sec(e+fx)+1))^{5/2}\left(-\frac{(5612\cos(e+fx)-5(736\cos(2(e+fx))-367\cos(3(e+fx))+111\cos(4(e+}{}\right.}{(\sec(e+fx)+1)^{5/2}(}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c - c*Sec[e + f*x])^(11/2),x]
```

```
[Out] (Sec[e + f*x]^(11/2)*(a*(1 + Sec[e + f*x]))^(5/2)*(((32*I)*Sqrt[2]*E^((I/2)
*(e + f*x))*Sqrt[(1 + E^(I*(e + f*x)))^2/(1 + E^((2*I)*(e + f*x)))]*(f*x +
(2*I)*Log[1 - E^(I*(e + f*x))]))/((1 + E^(I*(e + f*x)))*Sqrt[E^(I*(e + f*x)
)/(1 + E^((2*I)*(e + f*x)))]*f) - ((5612*Cos[e + f*x] - 5*(625 + 736*Cos[2*
(e + f*x)] - 367*Cos[3*(e + f*x)] + 111*Cos[4*(e + f*x)] - 21*Cos[5*(e + f*
x)]))*Csc[(e + f*x)/2]^10*Sec[(e + f*x)/2]*Sqrt[Sec[e + f*x]]*Sqrt[1 + Sec[
e + f*x]])/(240*f))*Sin[(e + f*x)/2]^11)/((1 + Sec[e + f*x])^(5/2)*(c - c*S
ec[e + f*x])^(11/2))
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)}}{c^6\sec\left(fx+e\right)^6-6\,c^6\sec\left(fx+e\right)^5+15\,c^6\sec\left(fx+e\right)^4-20\,c^6\sec\left(fx+e\right)^3+15\,c^6\sec\left(fx+e\right)^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(11/2),x, algorithm="fric
as")
```

```
[Out] integral((a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*sqrt(a*sec(f*x + e
) + a)*sqrt(-c*sec(f*x + e) + c)/(c^6*sec(f*x + e)^6 - 6*c^6*sec(f*x + e)^5
 + 15*c^6*sec(f*x + e)^4 - 20*c^6*sec(f*x + e)^3 + 15*c^6*sec(f*x + e)^2 -
6*c^6*sec(f*x + e) + c^6), 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+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(11/2),x, algorithm="giac
")
```

```
[Out] Timed out
```

maple [A] time = 2.19, size = 415, normalized size = 1.70

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(240\left(\cos^{5}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-120\left(\cos^{5}\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-1200\left(\cos^{4}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(11/2),x)
```

```
[Out] -1/120/f*(-1+cos(f*x+e))*(240*cos(f*x+e)^5*ln(-(-1+cos(f*x+e))/sin(f*x+e))-
120*cos(f*x+e)^5*ln(2/(1+cos(f*x+e)))-1200*cos(f*x+e)^4*ln(-(-1+cos(f*x+e))
/sin(f*x+e))-233*cos(f*x+e)^5+600*cos(f*x+e)^4*ln(2/(1+cos(f*x+e)))+2400*ln
(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)^3+325*cos(f*x+e)^4-1200*cos(f*x+e)
^3*ln(2/(1+cos(f*x+e)))-2400*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-1
10*cos(f*x+e)^3+1200*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+1200*ln(-(-1+cos(f*x
+e))/sin(f*x+e))*cos(f*x+e)-290*cos(f*x+e)^2-600*cos(f*x+e)*ln(2/(1+cos(f*x
+e)))-240*ln(-(-1+cos(f*x+e))/sin(f*x+e))+295*cos(f*x+e)+120*ln(2/(1+cos(f*
x+e)))-83)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/(c*(-1+cos(f*x+e))/cos(f*x+e
))^(11/2)/sin(f*x+e)/cos(f*x+e)^5*a^2
```

maxima [B] time = 146.31, size = 9150, normalized size = 37.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(11/2),x, algorithm="maxi
ma")
```

```
[Out] -1/15*(15*(f*x + e)*a^2*cos(10*f*x + 10*e)^2 + 30375*(f*x + e)*a^2*cos(8*f*
x + 8*e)^2 + 661500*(f*x + e)*a^2*cos(6*f*x + 6*e)^2 + 661500*(f*x + e)*a^2
*cos(4*f*x + 4*e)^2 + 30375*(f*x + e)*a^2*cos(2*f*x + 2*e)^2 + 1500*(f*x +
e)*a^2*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 216000*(f*x
 + e)*a^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 952560*(
f*x + e)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 21600
0*(f*x + e)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 15
00*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 1
5*(f*x + e)*a^2*sin(10*f*x + 10*e)^2 + 30375*(f*x + e)*a^2*sin(8*f*x + 8*e)
^2 + 661500*(f*x + e)*a^2*sin(6*f*x + 6*e)^2 + 661500*(f*x + e)*a^2*sin(4*f
*x + 4*e)^2 + 30375*(f*x + e)*a^2*sin(2*f*x + 2*e)^2 + 1500*(f*x + e)*a^2*s
in(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 216000*(f*x + e)*a^
2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 952560*(f*x + e)
*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 216000*(f*x +
```

```
e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 1500*(f*x
+ e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 1350*(f*x
+ e)*a^2*cos(2*f*x + 2*e) + 15*(f*x + e)*a^2 - 1110*a^2*sin(2*f*x + 2*e) -
30*(a^2*cos(10*f*x + 10*e)^2 + 2025*a^2*cos(8*f*x + 8*e)^2 + 44100*a^2*cos
(6*f*x + 6*e)^2 + 44100*a^2*cos(4*f*x + 4*e)^2 + 2025*a^2*cos(2*f*x + 2*e)^
2 + 100*a^2*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 14400*
a^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 63504*a^2*cos(
5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 14400*a^2*cos(3/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 100*a^2*cos(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e)))^2 + a^2*sin(10*f*x + 10*e)^2 + 2025*a^2*sin(
8*f*x + 8*e)^2 + 44100*a^2*sin(6*f*x + 6*e)^2 + 44100*a^2*sin(4*f*x + 4*e)^
2 + 18900*a^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 2025*a^2*sin(2*f*x + 2*e)
^2 + 100*a^2*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 14400
*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 63504*a^2*sin
(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 14400*a^2*sin(3/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 100*a^2*sin(1/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 90*a^2*cos(2*f*x + 2*e) + a^2 + 2*(45*a
^2*cos(8*f*x + 8*e) + 210*a^2*cos(6*f*x + 6*e) + 210*a^2*cos(4*f*x + 4*e) +
45*a^2*cos(2*f*x + 2*e) + a^2)*cos(10*f*x + 10*e) + 90*(210*a^2*cos(6*f*x
+ 6*e) + 210*a^2*cos(4*f*x + 4*e) + 45*a^2*cos(2*f*x + 2*e) + a^2)*cos(8*f*
x + 8*e) + 420*(210*a^2*cos(4*f*x + 4*e) + 45*a^2*cos(2*f*x + 2*e) + a^2)*c
os(6*f*x + 6*e) + 420*(45*a^2*cos(2*f*x + 2*e) + a^2)*cos(4*f*x + 4*e) - 20
*(a^2*cos(10*f*x + 10*e) + 45*a^2*cos(8*f*x + 8*e) + 210*a^2*cos(6*f*x + 6*
e) + 210*a^2*cos(4*f*x + 4*e) + 45*a^2*cos(2*f*x + 2*e) - 120*a^2*cos(7/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 252*a^2*cos(5/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))) - 120*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) - 10*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) + a^2)*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 240*(a
^2*cos(10*f*x + 10*e) + 45*a^2*cos(8*f*x + 8*e) + 210*a^2*cos(6*f*x + 6*e)
+ 210*a^2*cos(4*f*x + 4*e) + 45*a^2*cos(2*f*x + 2*e) - 252*a^2*cos(5/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 120*a^2*cos(3/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) - 10*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) + a^2)*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
- 504*(a^2*cos(10*f*x + 10*e) + 45*a^2*cos(8*f*x + 8*e) + 210*a^2*cos(6*f*
x + 6*e) + 210*a^2*cos(4*f*x + 4*e) + 45*a^2*cos(2*f*x + 2*e) - 120*a^2*cos
(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*a^2*cos(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a^2)*cos(5/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) - 240*(a^2*cos(10*f*x + 10*e) + 45*a^2*cos(8*f*x + 8*
e) + 210*a^2*cos(6*f*x + 6*e) + 210*a^2*cos(4*f*x + 4*e) + 45*a^2*cos(2*f*x
+ 2*e) - 10*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a^2
)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(a^2*cos(10*f*x
+ 10*e) + 45*a^2*cos(8*f*x + 8*e) + 210*a^2*cos(6*f*x + 6*e) + 210*a^2*cos
(4*f*x + 4*e) + 45*a^2*cos(2*f*x + 2*e) + a^2)*cos(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + 30*(3*a^2*sin(8*f*x + 8*e) + 14*a^2*sin(6*f*x +
6*e) + 14*a^2*sin(4*f*x + 4*e) + 3*a^2*sin(2*f*x + 2*e))*sin(10*f*x + 10*e)
+ 1350*(14*a^2*sin(6*f*x + 6*e) + 14*a^2*sin(4*f*x + 4*e) + 3*a^2*sin(2*f*
x + 2*e))*sin(8*f*x + 8*e) + 6300*(14*a^2*sin(4*f*x + 4*e) + 3*a^2*sin(2*f*
x + 2*e))*sin(6*f*x + 6*e) - 20*(a^2*sin(10*f*x + 10*e) + 45*a^2*sin(8*f*x
+ 8*e) + 210*a^2*sin(6*f*x + 6*e) + 210*a^2*sin(4*f*x + 4*e) + 45*a^2*sin(2
*f*x + 2*e) - 120*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
- 252*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 120*a^2*si
n(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*a^2*sin(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(9/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e))) - 240*(a^2*sin(10*f*x + 10*e) + 45*a^2*sin(8*f*x + 8*e) +
210*a^2*sin(6*f*x + 6*e) + 210*a^2*sin(4*f*x + 4*e) + 45*a^2*sin(2*f*x + 2*
e) - 252*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 120*a^2
*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*a^2*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(7/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) - 504*(a^2*sin(10*f*x + 10*e) + 45*a^2*sin(8*f*x + 8*e)
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+ 210*a^2*sin(6*f*x + 6*e) + 210*a^2*sin(4*f*x + 4*e) + 45*a^2*sin(2*f*x + 2*e) - 120*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 240*(a^2*sin(10*f*x + 10*e) + 45*a^2*sin(8*f*x + 8*e) + 210*a^2*sin(6*f*x + 6*e) + 210*a^2*sin(4*f*x + 4*e) + 45*a^2*sin(2*f*x + 2*e) - 10*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(a^2*sin(10*f*x + 10*e) + 45*a^2*sin(8*f*x + 8*e) + 210*a^2*sin(6*f*x + 6*e) + 210*a^2*sin(4*f*x + 4*e) + 45*a^2*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*arctan2(sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1) + 10*(135*(f*x + e)*a^2*cos(8*f*x + 8*e) + 630*(f*x + e)*a^2*cos(6*f*x + 6*e) + 630*(f*x + e)*a^2*cos(4*f*x + 4*e) + 135*(f*x + e)*a^2*cos(2*f*x + 2*e) + 3*(f*x + e)*a^2 - 111*a^2*sin(8*f*x + 8*e) - 625*a^2*sin(6*f*x + 6*e) - 625*a^2*sin(4*f*x + 4*e) - 111*a^2*sin(2*f*x + 2*e))*cos(10*f*x + 10*e) + 450*(630*(f*x + e)*a^2*cos(6*f*x + 6*e) + 630*(f*x + e)*a^2*cos(4*f*x + 4*e) + 135*(f*x + e)*a^2*cos(2*f*x + 2*e) + 3*(f*x + e)*a^2 - 107*a^2*sin(6*f*x + 6*e) - 107*a^2*sin(4*f*x + 4*e))*cos(8*f*x + 8*e) + 450*(2940*(f*x + e)*a^2*cos(4*f*x + 4*e) + 630*(f*x + e)*a^2*cos(2*f*x + 2*e) + 14*(f*x + e)*a^2 + 107*a^2*sin(2*f*x + 2*e))*cos(6*f*x + 6*e) + 450*(630*(f*x + e)*a^2*cos(2*f*x + 2*e) + 14*(f*x + e)*a^2 + 107*a^2*sin(2*f*x + 2*e))*cos(4*f*x + 4*e) - 10*(30*(f*x + e)*a^2*cos(10*f*x + 10*e) + 1350*(f*x + e)*a^2*cos(8*f*x + 8*e) + 6300*(f*x + e)*a^2*cos(6*f*x + 6*e) + 6300*(f*x + e)*a^2*cos(4*f*x + 4*e) + 1350*(f*x + e)*a^2*cos(2*f*x + 2*e) - 3600*(f*x + e)*a^2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 7560*(f*x + e)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 3600*(f*x + e)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 300*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 30*(f*x + e)*a^2 + 21*a^2*sin(10*f*x + 10*e) - 165*a^2*sin(8*f*x + 8*e) - 1840*a^2*sin(6*f*x + 6*e) - 1840*a^2*sin(4*f*x + 4*e) - 165*a^2*sin(2*f*x + 2*e) + 940*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2472*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 940*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(180*(f*x + e)*a^2*cos(10*f*x + 10*e) + 8100*(f*x + e)*a^2*cos(8*f*x + 8*e) + 37800*(f*x + e)*a^2*cos(6*f*x + 6*e) + 37800*(f*x + e)*a^2*cos(4*f*x + 4*e) + 8100*(f*x + e)*a^2*cos(2*f*x + 2*e) - 45360*(f*x + e)*a^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 21600*(f*x + e)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1800*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 180*(f*x + e)*a^2 + 173*a^2*sin(10*f*x + 10*e) + 1125*a^2*sin(8*f*x + 8*e) - 1170*a^2*sin(6*f*x + 6*e) - 1170*a^2*sin(4*f*x + 4*e) + 1125*a^2*sin(2*f*x + 2*e) + 2988*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 470*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 12*(630*(f*x + e)*a^2*cos(10*f*x + 10*e) + 28350*(f*x + e)*a^2*cos(8*f*x + 8*e) + 132300*(f*x + e)*a^2*cos(6*f*x + 6*e) + 132300*(f*x + e)*a^2*cos(4*f*x + 4*e) + 28350*(f*x + e)*a^2*cos(2*f*x + 2*e) - 75600*(f*x + e)*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 6300*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 630*(f*x + e)*a^2 + 647*a^2*sin(10*f*x + 10*e) + 5805*a^2*sin(8*f*x + 8*e) + 4620*a^2*sin(6*f*x + 6*e) + 4620*a^2*sin(4*f*x + 4*e) + 5805*a^2*sin(2*f*x + 2*e) - 4980*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2060*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(180*(f*x + e)*a^2*cos(10*f*x + 10*e) + 8100*(f*x + e)*a^2*cos(8*f*x + 8*e) + 37800*(f*x + e)*a^2*cos(6*f*x + 6*e) + 37800*(f*x + e)*a^2*cos(4*f*x + 4*e) + 8100*(f*x + e)*a^2*cos(2*f*x + 2*e) - 1800*(f*x + e)*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 180*(f*x + e)*a^2 + 173*a^2*sin(10*f*x + 10*e) + 1125*a^2*sin(8*f*x + 8*e) - 1170*a^2*sin(6*f*x + 6*e) - 1170*a^2*sin(4*f*x + 4*e) + 1125*a^2*sin(2*f*x + 2*e) - 470*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(3/2

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*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*(30*(f*x + e)*a^2*cos(10
*f*x + 10*e) + 1350*(f*x + e)*a^2*cos(8*f*x + 8*e) + 6300*(f*x + e)*a^2*cos
(6*f*x + 6*e) + 6300*(f*x + e)*a^2*cos(4*f*x + 4*e) + 1350*(f*x + e)*a^2*co
s(2*f*x + 2*e) + 30*(f*x + e)*a^2 + 21*a^2*sin(10*f*x + 10*e) - 165*a^2*sin
(8*f*x + 8*e) - 1840*a^2*sin(6*f*x + 6*e) - 1840*a^2*sin(4*f*x + 4*e) - 165
*a^2*sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + 10*(135*(f*x + e)*a^2*sin(8*f*x + 8*e) + 630*(f*x + e)*a^2*sin(6*f*x + 6
*e) + 630*(f*x + e)*a^2*sin(4*f*x + 4*e) + 135*(f*x + e)*a^2*sin(2*f*x + 2*
e) + 111*a^2*cos(8*f*x + 8*e) + 625*a^2*cos(6*f*x + 6*e) + 625*a^2*cos(4*f*
x + 4*e) + 111*a^2*cos(2*f*x + 2*e))*sin(10*f*x + 10*e) + 30*(9450*(f*x + e
)*a^2*sin(6*f*x + 6*e) + 9450*(f*x + e)*a^2*sin(4*f*x + 4*e) + 2025*(f*x +
e)*a^2*sin(2*f*x + 2*e) + 1605*a^2*cos(6*f*x + 6*e) + 1605*a^2*cos(4*f*x +
4*e) - 37*a^2)*sin(8*f*x + 8*e) + 50*(26460*(f*x + e)*a^2*sin(4*f*x + 4*e)
+ 5670*(f*x + e)*a^2*sin(2*f*x + 2*e) - 963*a^2*cos(2*f*x + 2*e) - 125*a^2)
*sin(6*f*x + 6*e) + 50*(5670*(f*x + e)*a^2*sin(2*f*x + 2*e) - 963*a^2*cos(2
*f*x + 2*e) - 125*a^2)*sin(4*f*x + 4*e) - 10*(30*(f*x + e)*a^2*sin(10*f*x +
 10*e) + 1350*(f*x + e)*a^2*sin(8*f*x + 8*e) + 6300*(f*x + e)*a^2*sin(6*f*x
 + 6*e) + 6300*(f*x + e)*a^2*sin(4*f*x + 4*e) + 1350*(f*x + e)*a^2*sin(2*f*
x + 2*e) - 3600*(f*x + e)*a^2*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) - 7560*(f*x + e)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e))) - 3600*(f*x + e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) - 300*(f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) - 21*a^2*cos(10*f*x + 10*e) + 165*a^2*cos(8*f*x + 8*e) + 1840*a^2*cos(6
*f*x + 6*e) + 1840*a^2*cos(4*f*x + 4*e) + 165*a^2*cos(2*f*x + 2*e) - 940*a^
2*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2472*a^2*cos(5/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 940*a^2*cos(3/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))) - 21*a^2)*sin(9/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) - 20*(180*(f*x + e)*a^2*sin(10*f*x + 10*e) + 8100*(f*x
+ e)*a^2*sin(8*f*x + 8*e) + 37800*(f*x + e)*a^2*sin(6*f*x + 6*e) + 37800*(f
*x + e)*a^2*sin(4*f*x + 4*e) + 8100*(f*x + e)*a^2*sin(2*f*x + 2*e) - 45360*
(f*x + e)*a^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 21600*
(f*x + e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1800*(
f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 173*a^2
*cos(10*f*x + 10*e) - 1125*a^2*cos(8*f*x + 8*e) + 1170*a^2*cos(6*f*x + 6*e)
 + 1170*a^2*cos(4*f*x + 4*e) - 1125*a^2*cos(2*f*x + 2*e) - 2988*a^2*cos(5/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 470*a^2*cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) - 173*a^2)*sin(7/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) - 12*(630*(f*x + e)*a^2*sin(10*f*x + 10*e) + 28350*(
f*x + e)*a^2*sin(8*f*x + 8*e) + 132300*(f*x + e)*a^2*sin(6*f*x + 6*e) + 132
300*(f*x + e)*a^2*sin(4*f*x + 4*e) + 28350*(f*x + e)*a^2*sin(2*f*x + 2*e) -
 75600*(f*x + e)*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) -
 6300*(f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) -
647*a^2*cos(10*f*x + 10*e) - 5805*a^2*cos(8*f*x + 8*e) - 4620*a^2*cos(6*f*x
 + 6*e) - 4620*a^2*cos(4*f*x + 4*e) - 5805*a^2*cos(2*f*x + 2*e) + 4980*a^2*
cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2060*a^2*cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 647*a^2)*sin(5/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) - 20*(180*(f*x + e)*a^2*sin(10*f*x + 10*e) +
 8100*(f*x + e)*a^2*sin(8*f*x + 8*e) + 37800*(f*x + e)*a^2*sin(6*f*x + 6*e)
 + 37800*(f*x + e)*a^2*sin(4*f*x + 4*e) + 8100*(f*x + e)*a^2*sin(2*f*x + 2*
e) - 1800*(f*x + e)*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
) - 173*a^2*cos(10*f*x + 10*e) - 1125*a^2*cos(8*f*x + 8*e) + 1170*a^2*cos(6
*f*x + 6*e) + 1170*a^2*cos(4*f*x + 4*e) - 1125*a^2*cos(2*f*x + 2*e) + 470*a
^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 173*a^2)*sin(3/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*(30*(f*x + e)*a^2*sin(10*
f*x + 10*e) + 1350*(f*x + e)*a^2*sin(8*f*x + 8*e) + 6300*(f*x + e)*a^2*sin(
6*f*x + 6*e) + 6300*(f*x + e)*a^2*sin(4*f*x + 4*e) + 1350*(f*x + e)*a^2*sin
(2*f*x + 2*e) - 21*a^2*cos(10*f*x + 10*e) + 165*a^2*cos(8*f*x + 8*e) + 1840
*a^2*cos(6*f*x + 6*e) + 1840*a^2*cos(4*f*x + 4*e) + 165*a^2*cos(2*f*x + 2*e
) - 21*a^2)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(a)*s
```

```
qrt(c)/((c^6*cos(10*f*x + 10*e)^2 + 2025*c^6*cos(8*f*x + 8*e)^2 + 44100*c^6
*cos(6*f*x + 6*e)^2 + 44100*c^6*cos(4*f*x + 4*e)^2 + 2025*c^6*cos(2*f*x + 2
*e)^2 + 100*c^6*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 14
400*c^6*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 63504*c^6*
cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 14400*c^6*cos(3/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 100*c^6*cos(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + c^6*sin(10*f*x + 10*e)^2 + 2025*c^6*
sin(8*f*x + 8*e)^2 + 44100*c^6*sin(6*f*x + 6*e)^2 + 44100*c^6*sin(4*f*x + 4
*e)^2 + 18900*c^6*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 2025*c^6*sin(2*f*x +
2*e)^2 + 100*c^6*sin(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 1
4400*c^6*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 63504*c^6
*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 14400*c^6*sin(3/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 100*c^6*sin(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 90*c^6*cos(2*f*x + 2*e) + c^6 + 2*(
45*c^6*cos(8*f*x + 8*e) + 210*c^6*cos(6*f*x + 6*e) + 210*c^6*cos(4*f*x + 4*
e) + 45*c^6*cos(2*f*x + 2*e) + c^6)*cos(10*f*x + 10*e) + 90*(210*c^6*cos(6*
f*x + 6*e) + 210*c^6*cos(4*f*x + 4*e) + 45*c^6*cos(2*f*x + 2*e) + c^6)*cos(
8*f*x + 8*e) + 420*(210*c^6*cos(4*f*x + 4*e) + 45*c^6*cos(2*f*x + 2*e) + c^
6)*cos(6*f*x + 6*e) + 420*(45*c^6*cos(2*f*x + 2*e) + c^6)*cos(4*f*x + 4*e)
- 20*(c^6*cos(10*f*x + 10*e) + 45*c^6*cos(8*f*x + 8*e) + 210*c^6*cos(6*f*x
+ 6*e) + 210*c^6*cos(4*f*x + 4*e) + 45*c^6*cos(2*f*x + 2*e) - 120*c^6*cos(7
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 252*c^6*cos(5/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) - 120*c^6*cos(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 10*c^6*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + c^6)*cos(9/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 24
0*(c^6*cos(10*f*x + 10*e) + 45*c^6*cos(8*f*x + 8*e) + 210*c^6*cos(6*f*x + 6
*e) + 210*c^6*cos(4*f*x + 4*e) + 45*c^6*cos(2*f*x + 2*e) - 252*c^6*cos(5/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 120*c^6*cos(3/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*c^6*cos(1/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) + c^6)*cos(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) - 504*(c^6*cos(10*f*x + 10*e) + 45*c^6*cos(8*f*x + 8*e) + 210*c^6*cos(
6*f*x + 6*e) + 210*c^6*cos(4*f*x + 4*e) + 45*c^6*cos(2*f*x + 2*e) - 120*c^6
*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*c^6*cos(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + c^6)*cos(5/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) - 240*(c^6*cos(10*f*x + 10*e) + 45*c^6*cos(8*f*x
+ 8*e) + 210*c^6*cos(6*f*x + 6*e) + 210*c^6*cos(4*f*x + 4*e) + 45*c^6*cos(2
*f*x + 2*e) - 10*c^6*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
 c^6)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(c^6*cos(10
*f*x + 10*e) + 45*c^6*cos(8*f*x + 8*e) + 210*c^6*cos(6*f*x + 6*e) + 210*c^6
*cos(4*f*x + 4*e) + 45*c^6*cos(2*f*x + 2*e) + c^6)*cos(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))) + 30*(3*c^6*sin(8*f*x + 8*e) + 14*c^6*sin(6*f*
x + 6*e) + 14*c^6*sin(4*f*x + 4*e) + 3*c^6*sin(2*f*x + 2*e))*sin(10*f*x + 1
0*e) + 1350*(14*c^6*sin(6*f*x + 6*e) + 14*c^6*sin(4*f*x + 4*e) + 3*c^6*sin(
2*f*x + 2*e))*sin(8*f*x + 8*e) + 6300*(14*c^6*sin(4*f*x + 4*e) + 3*c^6*sin(
2*f*x + 2*e))*sin(6*f*x + 6*e) - 20*(c^6*sin(10*f*x + 10*e) + 45*c^6*sin(8*
f*x + 8*e) + 210*c^6*sin(6*f*x + 6*e) + 210*c^6*sin(4*f*x + 4*e) + 45*c^6*s
in(2*f*x + 2*e) - 120*c^6*sin(7/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) - 252*c^6*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 120*c^
6*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*c^6*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(9/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) - 240*(c^6*sin(10*f*x + 10*e) + 45*c^6*sin(8*f*x + 8*e
) + 210*c^6*sin(6*f*x + 6*e) + 210*c^6*sin(4*f*x + 4*e) + 45*c^6*sin(2*f*x
+ 2*e) - 252*c^6*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 120
*c^6*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 10*c^6*sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(7/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 504*(c^6*sin(10*f*x + 10*e) + 45*c^6*sin(8*f*x +
8*e) + 210*c^6*sin(6*f*x + 6*e) + 210*c^6*sin(4*f*x + 4*e) + 45*c^6*sin(2*f
*x + 2*e) - 120*c^6*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) -
10*c^6*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arctan
```

```
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 240*(c^6*sin(10*f*x + 10*e) + 45*c
^6*sin(8*f*x + 8*e) + 210*c^6*sin(6*f*x + 6*e) + 210*c^6*sin(4*f*x + 4*e) +
 45*c^6*sin(2*f*x + 2*e) - 10*c^6*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 20*(c^6
*sin(10*f*x + 10*e) + 45*c^6*sin(8*f*x + 8*e) + 210*c^6*sin(6*f*x + 6*e) +
210*c^6*sin(4*f*x + 4*e) + 45*c^6*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))))*f)
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^(11/2),x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c - c/cos(e + f*x))^(11/2), 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+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(11/2),x)
[Out] Timed out
```

3.110 $\int \frac{(c-c\sec(e+fx))^{7/2}}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=204

$$\frac{c^4\tan(e+fx)\sec^2(e+fx)}{2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{4c^4\tan(e+fx)\sec(e+fx)}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{8c^4\tan(e+fx)\log(\sec(e}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c}}$$

```
[Out] c^4*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)+8*c^4*ln(1+sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+
e))^(1/2)-4*c^4*sec(f*x+e)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x
+e))^(1/2)+1/2*c^4*sec(f*x+e)^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*se
c(f*x+e))^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3912, 72}

$$\frac{c^4\tan(e+fx)\sec^2(e+fx)}{2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{4c^4\tan(e+fx)\sec(e+fx)}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{8c^4\tan(e+fx)\log(\sec(e}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(7/2)/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (c^4*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]]) + (8*c^4*Log[1 + Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*
Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - (4*c^4*Sec[e + f*x]*Tan[e + f*x])
/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (c^4*Sec[e + f*x]^
2*Tan[e + f*x])/(2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(c-c\sec(e+fx))^{7/2}}{\sqrt{a+a\sec(e+fx)}}\,dx &= -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \frac{(c-cx)^3}{x(a+ax)}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\
&= -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \left(\frac{4c^3}{a}+\frac{c^3}{ax}-\frac{c^3x}{a}-\frac{8c^3}{a(1+x)}\right)dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\
&= \frac{c^4\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}+\frac{8c^4\log(1+\sec(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}
\end{aligned}$$

Mathematica [C] time = 16.35, size = 153, normalized size = 0.75

$$\frac{c^3\cot\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{c-c\sec(e+fx)}\left(-16\log\left(1+e^{i(e+fx)}\right)+7\log\left(1+e^{2i(e+fx)}\right)+8\cos(e+fx)\right.}{2f\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(7/2)/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (c^3*Cot[(e + f*x)/2]*(-1 + I*f*x + 8*Cos[e + f*x] - 16*Log[1 + E^(I*(e + f
*x))] + 7*Log[1 + E^((2*I)*(e + f*x))] + Cos[2*(e + f*x)]*(I*f*x - 16*Log[1
 + E^(I*(e + f*x))] + 7*Log[1 + E^((2*I)*(e + f*x))]))*Sec[e + f*x]^2*Sqrt[
c - c*Sec[e + f*x]])/(2*f*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^3\sec\left(fx+e\right)^3-3\,c^3\sec\left(fx+e\right)^2+3\,c^3\sec\left(fx+e\right)-c^3\right)\sqrt{-c\sec\left(fx+e\right)+c}}{\sqrt{a\sec\left(fx+e\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral(-(c^3*sec(f*x + e)^3 - 3*c^3*sec(f*x + e)^2 + 3*c^3*sec(f*x + e) -
 c^3)*sqrt(-c*sec(f*x + e) + c)/sqrt(a*sec(f*x + e) + 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((c-c*sec(f*x+e))^(7/2)/(a+a*sec(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)
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)Warning, integrati
on of abs or sign assumes constant sign by intervals (correct if the argume
nt is real):Check [abs(cos(f*x+exp(1)))]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 chec
k sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)U
nable 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/t_nostep/2)>(-2*pi/t_nostep/2)Unabl
e to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
(2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)
>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/
2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integr
ation of abs or sign assumes constant sign by intervals (correct if the arg
ument is real):Check [abs(t_nostep^3+t_nostep)]Discontinuities at zeroes of
 t_nostep^3+t_nostep were not checkedUnable to check sign: (4*pi/t_nostep/2
)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep
/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to chec
```

```
k sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/x/2
)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check si
gn: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
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 or sign assumes constant sign by intervals (correct if the argument is rea
l):Check [abs(t_nostep^2-1),abs(t_nostep^3+t_nostep)]Warning, integration o
f abs or sign assumes constant sign by intervals (correct if the argument i
s real):Check [abs(t_nostep)]Sign error (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluati
on time: 4.5Limit: Max order reached or unable to make series expansion Err
or: Bad Argument Value
```

maple [A] time = 2.22, size = 190, normalized size = 0.93

$$\frac{\left(2\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)+14\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)+14\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(f\right.}{\sin\left(fx+e\right)}\right.}{2f\sin\left(fx+e\right)\left(-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/2/f*(2*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+14*ln(-(-sin(f*x+e)-1+cos(f*x+e)
)/sin(f*x+e))*cos(f*x+e)^2+14*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))*co
s(f*x+e)^2+9*cos(f*x+e)^2+8*cos(f*x+e)-1)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(7
/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*cos(f*x+e)^2/sin(f*x+e)/(-1+cos(f*x
+e))^3/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

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

$$\int \frac{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{7/2}}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(7/2)/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(7/2)/(a + a/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((c-c*sec(f*x+e))**(7/2)/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.111 $\int \frac{(c-c\sec(e+fx))^{5/2}}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=151

$$-\frac{c^3\tan(e+fx)\sec(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{4c^3\tan(e+fx)\log(\sec(e+fx)+1)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{c^3\tan(e+fx)\log(\cos(e}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c}}$$

```
[Out] c^3*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)+4*c^3*ln(1+sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+
e))^(1/2)-c^3*sec(f*x+e)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e
))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = {3912, 72}

$$-\frac{c^3\tan(e+fx)\sec(e+fx)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{4c^3\tan(e+fx)\log(\sec(e+fx)+1)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{c^3\tan(e+fx)\log(\cos(e}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(5/2)/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (c^3*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]]) + (4*c^3*Log[1 + Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*
Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - (c^3*Sec[e + f*x]*Tan[e + f*x])/(
f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(c-c\sec(e+fx))^{5/2}}{\sqrt{a+a\sec(e+fx)}}\,dx &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^2}{x(a+ax)}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\ &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(\frac{c^2}{a}+\frac{c^2}{ax}-\frac{4c^2}{a(1+x)}\right)dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\ &= \frac{c^3\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}+\frac{4c^3\log(1+\sec(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\end{aligned}$$

Mathematica [C] time = 4.02, size = 181, normalized size = 1.20

$$\frac{c^2e^{-3i(e+fx)}\left(1+e^{2i(e+fx)}\right)^3\cos\left(\frac{1}{2}(e+fx)\right)\cot\left(\frac{1}{2}(e+fx)\right)\sec^4(e+fx)\sqrt{c-c\sec(e+fx)}\,\left(1+\left(-8\log\left(1+e^{i(e+f}\right.\right.\right.}{4f\left(1+e^{i(e+fx)}\right)\sqrt{a(\sec(e+fx)+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(5/2)/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (c^2*(1 + E^((2*I)*(e + f*x)))^3*Cos[(e + f*x)/2]*Cot[(e + f*x)/2]*(1 + Cos
[e + f*x]*(I*f*x - 8*Log[1 + E^(I*(e + f*x))] + 3*Log[1 + E^((2*I)*(e + f*x
))]))*Sec[e + f*x]^4*Sqrt[c - c*Sec[e + f*x]]*(Cos[(e + f*x)/2] + I*Sin[(e
+ f*x)/2]))/(4*E^((3*I)*(e + f*x))*(1 + E^(I*(e + f*x)))*f*Sqrt[a*(1 + Sec[
e + f*x])])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^2\sec\left(fx+e\right)^2-2\,c^2\sec\left(fx+e\right)+c^2\right)\sqrt{-c\sec\left(fx+e\right)+c}}{\sqrt{a\sec\left(fx+e\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral((c^2*sec(f*x + e)^2 - 2*c^2*sec(f*x + e) + c^2)*sqrt(-c*sec(f*x +
e) + c)/sqrt(a*sec(f*x + e) + 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((c-c*sec(f*x+e))^(5/2)/(a+a*sec(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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by intervals (correct if the argument is real):Check [abs(t_nostep^2-1),abs
(t_nostep^3+t_nostep)]Warning, integration of abs or sign assumes constant
sign by intervals (correct if the argument is real):Check [abs(t_nostep)]Si
gn error (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluation time: 3.92Limit: Max order r
eached or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.24, size = 170, normalized size = 1.13

$$\frac{\left(3\cos\left(fx+e\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+3\cos\left(fx+e\right)\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+\cos\left(fx+e\right)\ln\left(\frac{}{1+\mathrm{co}}\right.\right.}{f\sin\left(fx+e\right)\left(-1+\cos\left(fx+e\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/f*(3*cos(f*x+e)*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+3*cos(f*x+e)*l
n(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))+cos(f*x+e)*ln(2/(1+cos(f*x+e)))+c
os(f*x+e)+1)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(5/2)*(a*(1+cos(f*x+e))/cos(f*x
+e))^(1/2)*cos(f*x+e)^2/sin(f*x+e)/(-1+cos(f*x+e))^2/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

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

$$\int \frac{{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{5/2}}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(5/2)/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(5/2)/(a + a/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((c-c*sec(f*x+e))**(5/2)/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Timed out
```

3.112 $\int \frac{(c-c\sec(e+fx))^{3/2}}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=102

$$\frac{2c^2\tan(e+fx)\log(\sec(e+fx)+1)}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{c^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] c^2*ln(cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)+2*c^2*ln(1+sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+
e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3912, 72}

$$\frac{2c^2\tan(e+fx)\log(\sec(e+fx)+1)}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{c^2\tan(e+fx)\log(\cos(e+fx))}{f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(3/2)/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (c^2*Log[Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]]) + (2*c^2*Log[1 + Sec[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*
Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(c-c\sec(e+fx))^{3/2}}{\sqrt{a+a\sec(e+fx)}}\,dx &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{c-cx}{x(a+ax)}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(\frac{c}{ax}-\frac{2c}{a(1+x)}\right)dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= \frac{c^2\log(\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}+\frac{2c^2\log(1+\sec(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\end{aligned}$$

Mathematica [C] time = 9.72, size = 103, normalized size = 1.01

$$-\frac{c\left(1+e^{i(e+fx)}\right)\left(4i\log\left(1+e^{i(e+fx)}\right)-i\log\left(1+e^{2i(e+fx)}\right)+fx\right)\sqrt{c-c\sec(e+fx)}}{f\left(-1+e^{i(e+fx)}\right)\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(3/2)/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] -((c*(1 + E^(I*(e + f*x)))*(f*x + (4*I)*Log[1 + E^(I*(e + f*x))] - I*Log[1
+ E^((2*I)*(e + f*x))])*Sqrt[c - c*Sec[e + f*x]])/((-1 + E^(I*(e + f*x)))*f
*Sqrt[a*(1 + Sec[e + f*x])]))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\sqrt{a\sec\left(fx+e\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral((-c*sec(f*x + e) + c)^(3/2)/sqrt(a*sec(f*x + e) + 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((c-c*sec(f*x+e))^(3/2)/(a+a*sec(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)
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)Warning, integrati
on of abs or sign assumes constant sign by intervals (correct if the argume
nt is real):Check [abs(cos(f*x+exp(1)))]Unable to check sign: (2*pi/x/2)>(-
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sumes constant sign by intervals (correct if the argument is real):Check [a
bs(t_nostep^2-1),abs(t_nostep^3+t_nostep)]Warning, integration of abs or si
gn assumes constant sign by intervals (correct if the argument is real):Che
ck [abs(t_nostep)]Sign error (%%%{2*c,0%%%}+%%%{1,2%%%})Evaluation time: 3.
52Limit: Max order reached or unable to make series expansion Error: Bad Ar
gument Value
```

maple [A] time = 2.40, size = 93, normalized size = 0.91

$$\frac{\ln\left(-\frac{4\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)^{2}}\right)\left(\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\left(\cos^{2}\left(fx+e\right)\right)\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}}{f\sin\left(fx+e\right)\left(-1+\cos\left(fx+e\right)\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/f*ln(-4*cos(f*x+e)/(1+cos(f*x+e))^2)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(3/2)
*cos(f*x+e)^2*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/(-1+cos(f*x+e)
)/a
```

maxima [A] time = 0.84, size = 60, normalized size = 0.59

$$-\frac{\left(\left(fx+e\right)c+c\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)+1\right)-4\,c\arctan\left(\sin\left(fx+e\right),\cos\left(fx+e\right)+1\right)\right)\sqrt{}}{\sqrt{a}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*c + c*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) - 4*c*arc
tan2(sin(f*x + e), cos(f*x + e) + 1))*sqrt(c)/(sqrt(a)*f)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{3}{2}}}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(3/2)/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral((-c*(sec(e + f*x) - 1))**(3/2)/sqrt(a*(sec(e + f*x) + 1)), x)
```

3.113 $\int \frac{\sqrt{c-c\sec(e+fx)}}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=49

$$\frac{c\tan(e+fx)\log(\cos(e+fx)+1)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

```
[Out] c*ln(1+cos(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)
```

Rubi [A] time = 0.08, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = $\{3911, 31\}$

$$\frac{c\tan(e+fx)\log(\cos(e+fx)+1)}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - c*Sec[e + f*x]]/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (c*Log[1 + Cos[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]])
```

Rule 31

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

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{c-c\sec(e+fx)}}{\sqrt{a+a\sec(e+fx)}}\,dx &= \frac{(ac\tan(e+fx))\operatorname{Subst}\left(\int \frac{1}{a+ax}\,dx, x, \cos(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\ &= \frac{c\log(1+\cos(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\end{aligned}$$

Mathematica [C] time = 0.98, size = 127, normalized size = 2.59

$$-\frac{\left(1+e^{i(e+fx)}\right)\sqrt{\frac{c\left(-1+e^{i(e+fx)}\right)^2}{1+e^{2i(e+fx)}}}\left(fx+2i\log\left(1+e^{i(e+fx)}\right)\right)}{f\left(-1+e^{i(e+fx)}\right)\sqrt{\frac{a\left(1+e^{i(e+fx)}\right)^2}{1+e^{2i(e+fx)}}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c - c*Sec[e + f*x]]/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] -(((1 + E^(I*(e + f*x)))*Sqrt[(c*(-1 + E^(I*(e + f*x)))^2)/(1 + E^((2*I)*(e
 + f*x)))]*(f*x + (2*I)*Log[1 + E^(I*(e + f*x))]))/((-1 + E^(I*(e + f*x)))*
Sqrt[(a*(1 + E^(I*(e + f*x)))^2)/(1 + E^((2*I)*(e + f*x)))]*f))
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c\sec\left(fx+e\right)+c}}{\sqrt{a\sec\left(fx+e\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(-c*sec(f*x + e) + c)/sqrt(a*sec(f*x + e) + a), x)
```

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((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
*pi/x/2)c*sqrt(-a*c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))*si
gn(cos(f*x+exp(1)))*ln(abs(c*tan(1/2*(f*x+exp(1)))^2+c))/a/f/abs(c)
```

maple [A] time = 2.41, size = 75, normalized size = 1.53

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\sqrt{\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)}{f\sin\left(fx+e\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2
)*cos(f*x+e)*ln(2/(1+cos(f*x+e)))/sin(f*x+e)/a
```

maxima [A] time = 0.73, size = 34, normalized size = 0.69

$$\frac{\sqrt{c}\log\left(\frac{\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}+1\right)}{\sqrt{-a}\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] sqrt(c)*log(sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)/(sqrt(-a)*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(1/2),x)
[Out] int((c - c/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(1/2)/(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral(sqrt(-c*(sec(e + f*x) - 1))/sqrt(a*(sec(e + f*x) + 1)), x)
```

3.114 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\,dx$

Optimal. Leaf size=46

$$\frac{\tan(e+fx)\log(\sin(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

```
[Out] ln(sin(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3905, 3475}

$$\frac{\tan(e+fx)\log(\sin(e+fx))}{f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]),x]
```

```
[Out] (Log[Sin[e + f*x]]*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec
[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rubi steps

$$\begin{aligned} \int \frac{1}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\,dx &= \frac{\tan(e+fx)\int \cot(e+fx)\,dx}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}} \\ &= \frac{\log(\sin(e+fx))\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}} \end{aligned}$$

Mathematica [C] time = 1.09, size = 104, normalized size = 2.26

$$-\frac{2\left(-1+e^{i(e+fx)}\right)\left(fx+i\log\left(1-e^{2i(e+fx)}\right)\right)\cos^2\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)}{f\left(1+e^{i(e+fx)}\right)\sqrt{a(\sec(e+fx)+1)}\,\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]),x]
```

```
[Out] (-2*(-1 + E^(I*(e + f*x)))*Cos[(e + f*x)/2]^2*(f*x + I*Log[1 - E^((2*I)*(e
+ f*x))])*Sec[e + f*x])/((1 + E^(I*(e + f*x)))*f*Sqrt[a*(1 + Sec[e + f*x])]
*Sqrt[c - c*Sec[e + f*x]])
```

fricas [B] time = 0.73, size = 272, normalized size = 5.91

$$\left[-\frac{\sqrt{-ac}\log\left(-\frac{8\left(\left(256\cos\left(fx+e\right)^{5}-512\cos\left(fx+e\right)^{3}+175\cos\left(fx+e\right)\right)\sqrt{-ac}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}-\left(256\,ac\cos\left(fx+e\right)^{4}-512\,ac\cos\left(fx+\right.\right.}{\left(\cos\left(fx+e\right)^{2}-1\right)\sin\left(fx+e\right)}\right.}{2\,acf}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] [-1/2*sqrt(-a*c)*log(-8*((256*cos(f*x + e)^5 - 512*cos(f*x + e)^3 + 175*cos
(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f
*x + e) - c)/cos(f*x + e)) - (256*a*c*cos(f*x + e)^4 - 512*a*c*cos(f*x + e)
^2 + 337*a*c)*sin(f*x + e))/((cos(f*x + e)^2 - 1)*sin(f*x + e)))/(a*c*f), -
sqrt(a*c)*arctan((16*cos(f*x + e)^3 - 7*cos(f*x + e))*sqrt(a*c)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))/((16*a
*c*cos(f*x + e)^2 - 25*a*c)*sin(f*x + e)))/(a*c*f)]
```

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(1/(c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[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
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g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check
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t if the argument is real):Check [abs(t_nostep)]Sign error %%%{c,2%%%}Sign
error (%%%{c,0%%%}+%%%{c,2%%%})Evaluation time: 2.4Limit: Max order reached
 or unable to make series expansion Error: Bad Argument Value
```

maple [B] time = 2.38, size = 101, normalized size = 2.20

$$-\frac{\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(\ln\left(-\frac{-1+\cos(fx+e)}{\sin(fx+e)}\right)-\ln\left(\frac{2}{1+\cos(fx+e)}\right)\right)\sqrt{\frac{c(-1+\cos(fx+e))}{\cos(fx+e)}}\cos\left(fx+e\right)}{f\sin\left(fx+e\right)ca}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(ln(-(-1+cos(f*x+e))/sin(f*x+e))-l
n(2/(1+cos(f*x+e))))*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)*cos(f*x+e)/sin(f*
x+e)/c/a
```

maxima [A] time = 0.84, size = 39, normalized size = 0.85

$$-\frac{fx+e-\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\left(2\,fx+2\,e\right)-1\right)}{\sqrt{a}\sqrt{c}f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] -(f*x + e - arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) - 1))/(sqrt(a)*sqrt(
c)*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos(e+fx)}}\sqrt{c-\frac{c}{\cos(e+fx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(1/2)),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(1/2)), x)
```

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

$$\int \frac{1}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))**(1/2)/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a*(sec(e + f*x) + 1))*sqrt(-c*(sec(e + f*x) - 1))), x)
```

3.115 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=168

$$\frac{\tan(e+fx)}{2cf(1-\cos(e+fx))\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{3\tan(e+fx)\log(1-\cos(e+fx))}{4cf\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{\tan}{4cf\sqrt{a}}$$

```
[Out] 1/2*tan(f*x+e)/c/f/(1-cos(f*x+e))/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)+3/4*ln(1-cos(f*x+e))*tan(f*x+e)/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*
x+e))^(1/2)+1/4*ln(1+cos(f*x+e))*tan(f*x+e)/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c
*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 217, normalized size of antiderivative = 1.29, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3912, 72}

$$-\frac{\tan(e+fx)}{2cf(1-\sec(e+fx))\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{3\tan(e+fx)\log(1-\sec(e+fx))}{4cf\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}+\frac{\mathrm{ta}}{4cf\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2)),x]
```

```
[Out] (Log[Cos[e + f*x]]*Tan[e + f*x])/(c*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*S
ec[e + f*x]]) + (3*Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(4*c*f*Sqrt[a + a*Se
c[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (Log[1 + Sec[e + f*x]]*Tan[e + f*x]
)/(4*c*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - Tan[e + f*x]/
(2*c*f*(1 - Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]
)
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{3/2}}\,dx &= -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \frac{1}{x(a+ax)(c-cx)^2}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\ &= -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \left(\frac{1}{2ac^2(-1+x)^2}-\frac{3}{4ac^2(-1+x)}+\frac{1}{ac^2x}-\frac{}{4ac^2}\right.\right.}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx}}\\ &= \frac{\log(\cos(e+fx))\tan(e+fx)}{cf\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}+\frac{3\log(1-\sec(e}{4cf\sqrt{a+a\sec(e+}}\end{aligned}$$

Mathematica [C] time = 8.67, size = 143, normalized size = 0.85

$$\frac{\tan(e+fx)\left(-3\log\left(1-e^{i(e+fx)}\right)-\log\left(1+e^{i(e+fx)}\right)+\left(3\log\left(1-e^{i(e+fx)}\right)+\log\left(1+e^{i(e+fx)}\right)-2ifx\right)\cos(e+\ldots}{2cf(\cos(e+fx)-1)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(3/2)),x]
```

```
[Out] ((-1 + (2*I)*f*x - 3*Log[1 - E^(I*(e + f*x))] - Log[1 + E^(I*(e + f*x))] +
Cos[e + f*x]*((-2*I)*f*x + 3*Log[1 - E^(I*(e + f*x))] + Log[1 + E^(I*(e + f
*x))]))*Tan[e + f*x])/(2*c*f*(-1 + Cos[e + f*x])*Sqrt[a*(1 + Sec[e + f*x])]
*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\sqrt{-c\sec\left(fx+e\right)+c}}{ac^2\sec\left(fx+e\right)^3-ac^2\sec\left(fx+e\right)^2-ac^2\sec\left(fx+e\right)+ac^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a*c^2*sec(f*x
+ e)^3 - a*c^2*sec(f*x + e)^2 - a*c^2*sec(f*x + e) + a*c^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(1/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[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
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/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant
sign by intervals (correct if the argument is real):Check [abs(t_nostep^3+t
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 assumes constant sign by intervals (correct if the argument is real):Check
```

```
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 were not checkedUnable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
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ion of abs or sign assumes constant sign by intervals (correct if the argum
ent is real):Check [abs(t_nostep^3+t_nostep)]Discontinuities at zeroes of t
_nostep^3+t_nostep were not checkedDiscontinuities at zeroes of cos(f*t_nos
tep+exp(1)) were not checkedUnable to check sign: (2*pi/t_nostep/2)>(-2*pi/
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ect if the argument is real):Check [abs(t_nostep),abs(t_nostep^2-1)]Warning
, integration of abs or sign assumes constant sign by intervals (correct if
 the argument is real):Check [abs(t_nostep)]Sign error (%%%{c,0%%%}+%%%{c,2
%%%})Sign error %%%{-c,2%%%}Evaluation time: 2.46Limit: Max order reached o
r unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.59, size = 167, normalized size = 0.99

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)\left(6\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\cos\left(fx+e\right)-4\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-6\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-\right.}{4f\left(\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\cos\left(fx+e\right)\sin\left(fx+e\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/4/f*(-1+cos(f*x+e))*(6*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)-4*cos(
f*x+e)*ln(2/(1+cos(f*x+e)))-6*ln(-(-1+cos(f*x+e))/sin(f*x+e))-cos(f*x+e)+4*
ln(2/(1+cos(f*x+e)))-1)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/(c*(-1+cos(f*x+
e))/cos(f*x+e))^(3/2)/cos(f*x+e)/sin(f*x+e)/a
```

maxima [B] time = 0.95, size = 818, normalized size = 4.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] -1/2*(2*(f*x + e)*cos(2*f*x + 2*e)^2 + 8*(f*x + e)*cos(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e)))^2 + 2*(f*x + e)*sin(2*f*x + 2*e)^2 + 8*(f*x +
e)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*f*x - (cos(2*
f*x + 2*e)^2 - 4*(cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^
2 + sin(2*f*x + 2*e)^2 - 4*sin(2*f*x + 2*e)*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) + 4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + 2*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1
) - 3*(cos(2*f*x + 2*e)^2 - 4*(cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e)))^2 + sin(2*f*x + 2*e)^2 - 4*sin(2*f*x + 2*e)*sin(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*sin(1/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e)))^2 + 2*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
```

```
 + 2*e))) - 1) + 4*(f*x + e)*cos(2*f*x + 2*e) - 2*(4*f*x + 4*(f*x + e)*cos(
2*f*x + 2*e) + 4*e + sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e))) - 2*(4*(f*x + e)*sin(2*f*x + 2*e) - cos(2*f*x + 2*e) - 1)*
sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*e)/((c*cos(2*f*x +
 2*e)^2 + 4*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + c*si
n(2*f*x + 2*e)^2 - 4*c*sin(2*f*x + 2*e)*sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 4*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 2*c*cos(2*f*x + 2*e) - 4*(c*cos(2*f*x + 2*e) + c)*cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + c)*sqrt(a)*sqrt(c)*f)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(3/2)),x)
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(3/2)), x)
```

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

$$\int \frac{1}{\sqrt{a \left(\sec{\left(e + f x \right)} + 1\right)} \left(- c \left(\sec{\left(e + f x \right)} - 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))**(3/2)/(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral(1/(sqrt(a*(sec(e + f*x) + 1))*(-c*(sec(e + f*x) - 1))**(3/2)), x)
```

3.116 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=274

$$-\frac{3\tan(e+fx)}{4c^2f(1-\sec(e+fx))\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{4c^2f(1-\sec(e+fx))^2\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\text{s}}}$$

```
[Out] ln(cos(f*x+e))*tan(f*x+e)/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)+7/8*ln(1-sec(f*x+e))*tan(f*x+e)/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*
x+e))^(1/2)+1/8*ln(1+sec(f*x+e))*tan(f*x+e)/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c
-c*sec(f*x+e))^(1/2)-1/4*tan(f*x+e)/c^2/f/(1-sec(f*x+e))^2/(a+a*sec(f*x+e))
^(1/2)/(c-c*sec(f*x+e))^(1/2)-3/4*tan(f*x+e)/c^2/f/(1-sec(f*x+e))/(a+a*sec(
f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 274, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = {3912, 72}

$$-\frac{3\tan(e+fx)}{4c^2f(1-\sec(e+fx))\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{4c^2f(1-\sec(e+fx))^2\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\text{s}}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5/2)),x]
```

```
[Out] (Log[Cos[e + f*x]]*Tan[e + f*x])/(c^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]]) + (7*Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(8*c^2*f*Sqrt[a +
a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (Log[1 + Sec[e + f*x]]*Tan[e +
f*x])/(8*c^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - Tan[e +
 f*x]/(4*c^2*f*(1 - Sec[e + f*x])^2*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec
[e + f*x]]) - (3*Tan[e + f*x])/(4*c^2*f*(1 - Sec[e + f*x])*Sqrt[a + a*Sec[e
 + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^{5/2}}\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{x(a+ax)(c-cx)^3}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(-\frac{1}{2ac^3(-1+x)^3}+\frac{3}{4ac^3(-1+x)^2}-\frac{7}{8ac^3(-1+}\right.\right.}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec}}$$

$$= \frac{\log(\cos(e+fx))\tan(e+fx)}{c^2f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}+\frac{7\log(1-\sec(}{8c^2f\sqrt{a+a\sec(e}}$$

Mathematica [C] time = 1.93, size = 194, normalized size = 0.71

$$\frac{\tan(e+fx)\left(21\log\left(1-e^{i(e+fx)}\right)+3\log\left(1+e^{i(e+fx)}\right)+\left(-28\log\left(1-e^{i(e+fx)}\right)-4\log\left(1+e^{i(e+fx)}\right)+16ifx-\right.\right.}{8c^2f(\cos(e+fx)-1)^2\sqrt{a(\sec(e+fx)+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^(5/2)),x]
```

```
[Out] ((8 - (12*I)*f*x + 21*Log[1 - E^(I*(e + f*x))] + Cos[e + f*x]*(-10 + (16*I)
*f*x - 28*Log[1 - E^(I*(e + f*x))] - 4*Log[1 + E^(I*(e + f*x))]) + 3*Log[1
+ E^(I*(e + f*x))] + Cos[2*(e + f*x)]*((-4*I)*f*x + 7*Log[1 - E^(I*(e + f*x
))] + Log[1 + E^(I*(e + f*x))]))*Tan[e + f*x])/(8*c^2*f*(-1 + Cos[e + f*x])
^2*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{ac^3\sec\left(fx+e\right)^4-2\,ac^3\sec\left(fx+e\right)^3+2\,ac^3\sec\left(fx+e\right)-ac^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] integral(-sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a*c^3*sec(f*x
 + e)^4 - 2*a*c^3*sec(f*x + e)^3 + 2*a*c^3*sec(f*x + e) - a*c^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(1/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[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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the argument is real):Check [abs(t_nostep),abs(t_nostep^2-1)]Warning, integ
ration of abs or sign assumes constant sign by intervals (correct if the ar
gument is real):Check [abs(t_nostep)]Evaluation time: 2.74index.cc index_m
i_lex_is_greater Error: Bad Argument Value
```

maple [A] time = 2.59, size = 229, normalized size = 0.84

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(16\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)-28\left(\cos^2\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-32\cos\left(fx+e\right)\right.}{16f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/16/f*(-1+cos(f*x+e))*(16*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2-28*cos(f*x+e)^
2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-32*cos(f*x+e)*ln(2/(1+cos(f*x+e)))+56*ln(
-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)+9*cos(f*x+e)^2+16*ln(2/(1+cos(f*x+e
)))-28*ln(-(-1+cos(f*x+e))/sin(f*x+e))+2*cos(f*x+e)-7)*(a*(1+cos(f*x+e))/co
s(f*x+e))^(1/2)/(c*(-1+cos(f*x+e))/cos(f*x+e))^(5/2)/sin(f*x+e)/cos(f*x+e)^
2/a
```

maxima [B] time = 1.28, size = 2206, normalized size = 8.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] -1/4*(4*(f*x + e)*cos(4*f*x + 4*e)^2 + 144*(f*x + e)*cos(2*f*x + 2*e)^2 + 6
4*(f*x + e)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 64*(f*
x + e)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*(f*x + e)
*sin(4*f*x + 4*e)^2 + 144*(f*x + e)*sin(2*f*x + 2*e)^2 + 64*(f*x + e)*sin(3
```

```
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 64*(f*x + e)*sin(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*f*x - (2*(6*cos(2*f*x + 2*
e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x + 4*e)^2 + 36*cos(2*f*x + 2*e)^2 - 8*(
cos(4*f*x + 4*e) + 6*cos(2*f*x + 2*e) - 4*cos(1/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 16*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 8*(cos(4*f
*x + 4*e) + 6*cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + 16*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
 sin(4*f*x + 4*e)^2 + 12*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*sin(2*f*x +
 2*e)^2 - 8*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e) - 4*sin(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + 16*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 8
*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))) + 16*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 12*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1)
 - 7*(2*(6*cos(2*f*x + 2*e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x + 4*e)^2 + 36
*cos(2*f*x + 2*e)^2 - 8*(cos(4*f*x + 4*e) + 6*cos(2*f*x + 2*e) - 4*cos(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) + 16*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e)))^2 - 8*(cos(4*f*x + 4*e) + 6*cos(2*f*x + 2*e) + 1)*cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*cos(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))^2 + sin(4*f*x + 4*e)^2 + 12*sin(4*f*x + 4*e)*sin(2*f*
x + 2*e) + 36*sin(2*f*x + 2*e)^2 - 8*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e)
 - 4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*sin(3/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e)))^2 - 8*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e))*sin(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*sin(1/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 12*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) - 1) + 8*(f*x + 6*(f*x + e)*cos(2*f*x + 2*e) + e - 2*s
in(2*f*x + 2*e))*cos(4*f*x + 4*e) + 48*(f*x + e)*cos(2*f*x + 2*e) - 2*(16*f
*x + 16*(f*x + e)*cos(4*f*x + 4*e) + 96*(f*x + e)*cos(2*f*x + 2*e) - 64*(f*
x + e)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*e + 5*sin(
4*f*x + 4*e) - 2*sin(2*f*x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) - 2*(16*f*x + 16*(f*x + e)*cos(4*f*x + 4*e) + 96*(f*x + e)*cos
(2*f*x + 2*e) + 16*e + 5*sin(4*f*x + 4*e) - 2*sin(2*f*x + 2*e))*cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*(3*(f*x + e)*sin(2*f*x + 2*e
) + cos(2*f*x + 2*e))*sin(4*f*x + 4*e) - 2*(16*(f*x + e)*sin(4*f*x + 4*e) +
 96*(f*x + e)*sin(2*f*x + 2*e) - 64*(f*x + e)*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 5*cos(4*f*x + 4*e) + 2*cos(2*f*x + 2*e) - 5)*sin(
3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*(16*(f*x + e)*sin(4*f*
x + 4*e) + 96*(f*x + e)*sin(2*f*x + 2*e) - 5*cos(4*f*x + 4*e) + 2*cos(2*f*x
 + 2*e) - 5)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*e - 1
6*sin(2*f*x + 2*e))/((c^2*cos(4*f*x + 4*e)^2 + 36*c^2*cos(2*f*x + 2*e)^2 +
16*c^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*c^2*cos(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + c^2*sin(4*f*x + 4*e)^2
 + 12*c^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*c^2*sin(2*f*x + 2*e)^2 + 1
6*c^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*c^2*sin(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 12*c^2*cos(2*f*x + 2*e)
 + c^2 + 2*(6*c^2*cos(2*f*x + 2*e) + c^2)*cos(4*f*x + 4*e) - 8*(c^2*cos(4*f
*x + 4*e) + 6*c^2*cos(2*f*x + 2*e) - 4*c^2*cos(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + c^2)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) - 8*(c^2*cos(4*f*x + 4*e) + 6*c^2*cos(2*f*x + 2*e) + c^2)*cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 8*(c^2*sin(4*f*x + 4*e) + 6*c^2
*sin(2*f*x + 2*e) - 4*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 8*(c^2*sin(4*f*
x + 4*e) + 6*c^2*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))))*sqrt(a)*sqrt(c)*f)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos(e+f\,x)}}\,\left(c-\frac{c}{\cos(e+f\,x)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(5/2)),x)
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^(5/2)), x)
```

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

$$\int \frac{1}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}\,\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c-c*sec(f*x+e))**(5/2)/(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral(1/(sqrt(a*(sec(e + f*x) + 1))*(-c*(sec(e + f*x) - 1))**(5/2)), x)
```

3.117 $\int \frac{(c-c\sec(e+fx))^{7/2}}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=215

$$\frac{c^4\tan(e+fx)\sec(e+fx)}{af\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{8c^4\tan(e+fx)}{af(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{4c^4\,\mathrm{t}}{af\sqrt{a\,\mathrm{s}}}$$

```
[Out] c^4*ln(cos(f*x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)-4*c^4*ln(1+sec(f*x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(
f*x+e))^(1/2)+c^4*sec(f*x+e)*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec
(f*x+e))^(1/2)-8*c^4*tan(f*x+e)/a/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)/(
c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3912, 88}

$$\frac{c^4\tan(e+fx)\sec(e+fx)}{af\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{8c^4\tan(e+fx)}{af(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{4c^4\,\mathrm{t}}{af\sqrt{a\,\mathrm{s}}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(7/2)/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (c^4*Log[Cos[e + f*x]]*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) - (4*c^4*Log[1 + Sec[e + f*x]]*Tan[e + f*x])/(a*f*Sqrt[a
+ a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (c^4*Sec[e + f*x]*Tan[e + f*x
])/(a*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - (8*c^4*Tan[e +
 f*x])/(a*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e +
f*x]])
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(c-c\sec(e+fx))^{7/2}}{(a+a\sec(e+fx))^{3/2}}\,dx &= -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \frac{(c-cx)^3}{x(a+ax)^2}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\
&= -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \left(-\frac{c^3}{a^2}+\frac{c^3}{a^2x}-\frac{8c^3}{a^2(1+x)^2}+\frac{4c^3}{a^2(1+x)}\right)dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\
&= \frac{c^4\log(\cos(e+fx))\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}-\frac{4c^4\log(1+\sec(e+fx))\tan(e+}{af\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e}}
\end{aligned}$$

Mathematica [C] time = 2.27, size = 204, normalized size = 0.95

$$\frac{c^3 \cot\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{c-c\sec(e+fx)}\left(8\log\left(1+e^{i(e+fx)}\right)-5\log\left(1+e^{2i(e+fx)}\right)+2\left(8\log\left(1+e^{i(e+fx)}\right)\right.\right.}{2af(\cos(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(7/2)/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (c^3*Cot[(e + f*x)/2]*(-2 + I*f*x + 8*Log[1 + E^(I*(e + f*x))] + 2*Cos[e +
f*x]*(-9 + I*f*x + 8*Log[1 + E^(I*(e + f*x))] - 5*Log[1 + E^((2*I)*(e + f*x
))]) + Cos[2*(e + f*x)]*(I*f*x + 8*Log[1 + E^(I*(e + f*x))] - 5*Log[1 + E^(
(2*I)*(e + f*x))]) - 5*Log[1 + E^((2*I)*(e + f*x))])*Sec[e + f*x]*Sqrt[c -
c*Sec[e + f*x]])/(2*a*f*(1 + Cos[e + f*x])*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^3\sec\left(fx+e\right)^3-3\,c^3\sec\left(fx+e\right)^2+3\,c^3\sec\left(fx+e\right)-c^3\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+}}{a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] integral(-(c^3*sec(f*x + e)^3 - 3*c^3*sec(f*x + e)^2 + 3*c^3*sec(f*x + e) -
 c^3)*sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^2*sec(f*x + e)^
2 + 2*a^2*sec(f*x + e) + a^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((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [A] time = 2.27, size = 278, normalized size = 1.29

$$\frac{\left(5\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)+5\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)-\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/f*(5*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))*cos(f*x+e)^2+5*ln(-(-sin(
f*x+e)-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)^2-ln(2/(1+cos(f*x+e)))*cos(f*x+
e)^2+5*cos(f*x+e)*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+5*cos(f*x+e)*l
n(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))-3*cos(f*x+e)^2-cos(f*x+e)*ln(2/(1
+cos(f*x+e)))+6*cos(f*x+e)+1)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(7/2)*cos(f*x+
e)^3*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)^3/(-1+cos(f*x+e))^2/a^2
```

maxima [B] time = 1.48, size = 2393, normalized size = 11.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*c^3*cos(4*f*x + 4*e)^2 + 4*(f*x + e)*c^3*cos(2*f*x + 2*e)^2 + (
f*x + e)*c^3*sin(4*f*x + 4*e)^2 + 4*(f*x + e)*c^3*sin(2*f*x + 2*e)^2 + 4*(f
*x + e)*c^3*cos(2*f*x + 2*e) + (f*x + e)*c^3 - 4*c^3*sin(2*f*x + 2*e) + 4*(
(f*x + e)*c^3 - 5*c^3*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(
3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*((f*x + e)*c^3 - 5*c
^3*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*((f*x + e)*c^3 - 5*c^3*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e) + 1))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e)))^2 + 4*((f*x + e)*c^3 - 5*c^3*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 5*(c
^3*cos(4*f*x + 4*e)^2 + 4*c^3*cos(2*f*x + 2*e)^2 + c^3*sin(4*f*x + 4*e)^2 +
 4*c^3*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*c^3*sin(2*f*x + 2*e)^2 + 4*c^3
*cos(2*f*x + 2*e) + c^3 + 2*(2*c^3*cos(2*f*x + 2*e) + c^3)*cos(4*f*x + 4*e)
)*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) + 8*(c^3*cos(4*f*x + 4*e)
^2 + 4*c^3*cos(2*f*x + 2*e)^2 + 4*c^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e)))^2 + 4*c^3*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + c^3*sin(4*f*x + 4*e)^2 + 4*c^3*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) +
4*c^3*sin(2*f*x + 2*e)^2 + 4*c^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e)))^2 + 4*c^3*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2
 + 4*c^3*cos(2*f*x + 2*e) + c^3 + 2*(2*c^3*cos(2*f*x + 2*e) + c^3)*cos(4*f*
x + 4*e) + 4*(c^3*cos(4*f*x + 4*e) + 2*c^3*cos(2*f*x + 2*e) + 2*c^3*cos(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + c^3)*cos(3/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 4*(c^3*cos(4*f*x + 4*e) + 2*c^3*cos(2*f*x
+ 2*e) + c^3)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*(c^3
*sin(4*f*x + 4*e) + 2*c^3*sin(2*f*x + 2*e) + 2*c^3*sin(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e))) + 4*(c^3*sin(4*f*x + 4*e) + 2*c^3*sin(2*f*x + 2*e))*sin(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*arctan2(sin(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) + 1) + 2*(2*(f*x + e)*c^3*cos(2*f*x + 2*e) + (f*x + e)*c^3 - 2*c^3*sin(
2*f*x + 2*e))*cos(4*f*x + 4*e) + 2*(2*(f*x + e)*c^3*cos(4*f*x + 4*e) + 4*(f
*x + e)*c^3*cos(2*f*x + 2*e) + 2*(f*x + e)*c^3 + 9*c^3*sin(4*f*x + 4*e) + 1
4*c^3*sin(2*f*x + 2*e) - 10*(c^3*cos(4*f*x + 4*e) + 2*c^3*cos(2*f*x + 2*e)
+ c^3)*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1) + 4*((f*x + e)*c^3 -
 5*c^3*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) + 2*(2*(f*x + e)*c^3*cos(4*f*x + 4*e) + 4*(f*x + e)*c^3*cos(2*
f*x + 2*e) + 2*(f*x + e)*c^3 + 9*c^3*sin(4*f*x + 4*e) + 14*c^3*sin(2*f*x +
2*e) - 10*(c^3*cos(4*f*x + 4*e) + 2*c^3*cos(2*f*x + 2*e) + c^3)*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) + 4*((f*x + e)*c^3*sin(2*f*x + 2*e) + c^3*cos(2*f*x + 2*e))
*sin(4*f*x + 4*e) + 2*(2*(f*x + e)*c^3*sin(4*f*x + 4*e) + 4*(f*x + e)*c^3*s
in(2*f*x + 2*e) - 9*c^3*cos(4*f*x + 4*e) - 14*c^3*cos(2*f*x + 2*e) - 9*c^3
- 10*(c^3*sin(4*f*x + 4*e) + 2*c^3*sin(2*f*x + 2*e))*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e) + 1) + 4*((f*x + e)*c^3 - 5*c^3*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(2*(f*x + e)
*c^3*sin(4*f*x + 4*e) + 4*(f*x + e)*c^3*sin(2*f*x + 2*e) - 9*c^3*cos(4*f*x
+ 4*e) - 14*c^3*cos(2*f*x + 2*e) - 9*c^3 - 10*(c^3*sin(4*f*x + 4*e) + 2*c^3
*sin(2*f*x + 2*e))*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(c)/((a*cos(4*f*x + 4*e)
^2 + 4*a*cos(2*f*x + 2*e)^2 + 4*a*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e)))^2 + 4*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2
+ a*sin(4*f*x + 4*e)^2 + 4*a*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*a*sin(2*
f*x + 2*e)^2 + 4*a*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
```

```
 4*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*(2*a*cos(2*
f*x + 2*e) + a)*cos(4*f*x + 4*e) + 4*a*cos(2*f*x + 2*e) + 4*(a*cos(4*f*x +
4*e) + 2*a*cos(2*f*x + 2*e) + 2*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + a)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*(
a*cos(4*f*x + 4*e) + 2*a*cos(2*f*x + 2*e) + a)*cos(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + 4*(a*sin(4*f*x + 4*e) + 2*a*sin(2*f*x + 2*e) + 2
*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*(a*sin(4*f*x + 4*e) + 2*a*sin(2*f*x
+ 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a)*sqrt(a)*f
)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{7/2}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(7/2)/(a + a/cos(e + f*x))^(3/2),x)
[Out] int((c - c/cos(e + f*x))^(7/2)/(a + a/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((c-c*sec(f*x+e))**(7/2)/(a+a*sec(f*x+e))**(3/2),x)
[Out] Timed out
```

3.118 $\int \frac{(c-c\sec(e+fx))^{5/2}}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{c^3\tan(e+fx)\log(\cos(e+fx))}{af\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{4c^3\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] -4*c^3*tan(f*x+e)/f/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2)+c^3*ln(co
s(f*x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3910, 3905, 3475}

$$\frac{c^3\tan(e+fx)\log(\cos(e+fx))}{af\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{4c^3\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(5/2)/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (-4*c^3*Tan[e + f*x])/(f*(a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]
]) + (c^3*Log[Cos[e + f*x]]*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]]*Sqr
t[c - c*Sec[e + f*x]])
```

Rule 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rule 3910

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(5/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-8*a^3*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a^2/c^2, Int[Sqrt
[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rubi steps

$$\begin{aligned}\int \frac{(c-c\sec(e+fx))^{5/2}}{(a+a\sec(e+fx))^{3/2}}\,dx &= -\frac{4c^3\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{c^2\int\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\,\mathrm{se}}}{a^2}\\ &= -\frac{4c^3\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}-\frac{\left(c^3\tan(e+fx)\right)\int\tan(e+fx}{a\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e}}\\ &= -\frac{4c^3\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{c^3\log(\cos(e+fx))\tan(e+}{af\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(}}\end{aligned}$$

Mathematica [C] time = 0.74, size = 116, normalized size = 1.21

$$\frac{ic^2\cot\left(\frac{1}{2}(e+fx)\right)\sqrt{c-c\sec(e+fx)}\left(i\log\left(1+e^{2i(e+fx)}\right)+\left(fx+i\log\left(1+e^{2i(e+fx)}\right)\right)\cos(e+fx)+fx+4i\right)}{af(\cos(e+fx)+1)\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(5/2)/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (I*c^2*Cot[(e + f*x)/2]*(4*I + f*x + Cos[e + f*x]*(f*x + I*Log[1 + E^((2*I)
*(e + f*x))]) + I*Log[1 + E^((2*I)*(e + f*x))])*Sqrt[c - c*Sec[e + f*x]])/(
a*f*(1 + Cos[e + f*x])*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [B] time = 0.58, size = 453, normalized size = 4.72

$$\left[-\frac{4\,c^2\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)-\left(ac^2\cos\left(fx+e\right)^2+2\,ac^2\cos\left(fx+e\right)+ac^2\right)\sqrt{-\frac{c}{a}} \cdots}{2\left(a^2f\cos\left(fx+e\right)^2+2\,a^2f\cos\left(fx+e\right) \cdots\right.} \cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] [-1/2*(4*c^2*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) -
 c)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - (a*c^2*cos(f*x + e)^2 + 2*a*c
^2*cos(f*x + e) + a*c^2)*sqrt(-c/a)*log(1/2*(c*cos(f*x + e)^4 - (cos(f*x +
e)^3 + cos(f*x + e))*sqrt(-c/a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqr
t((c*cos(f*x + e) - c)/cos(f*x + e))*sin(f*x + e) + c)/cos(f*x + e)^2))/(a^
2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f), -(2*c^2*sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e))*cos(f*x +
e)*sin(f*x + e) - (a*c^2*cos(f*x + e)^2 + 2*a*c^2*cos(f*x + e) + a*c^2)*sqr
t(c/a)*arctan(sqrt(c/a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos
(f*x + e) - c)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)/(c*cos(f*x + e)^2 +
c)))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f)]
```

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((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] Timed out
```

maple [B] time = 2.16, size = 238, normalized size = 2.48

$$\frac{\left(\cos\left(fx+e\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+\cos\left(fx+e\right)\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)} \cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/f*(cos(f*x+e)*ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+cos(f*x+e)*ln(-(
-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))-cos(f*x+e)*ln(2/(1+cos(f*x+e)))+ln(-(
-1+cos(f*x+e)+sin(f*x+e))/sin(f*x+e))+ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*
x+e))-2*cos(f*x+e)-ln(2/(1+cos(f*x+e)))+2)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(
5/2)*cos(f*x+e)^3*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)^3/(-1+cos(
f*x+e))/a^2
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(5/2)/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(5/2)/(a + a/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((c-c*sec(f*x+e))**(5/2)/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] Timed out
```

3.119 $\int \frac{(c-c\sec(e+fx))^{3/2}}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=98

$$\frac{c^2\tan(e+fx)\log(\cos(e+fx)+1)}{af\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{2c^2\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] -2*c^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2)+c^2*ln(1+
cos(f*x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3908, 3911, 31}

$$\frac{c^2\tan(e+fx)\log(\cos(e+fx)+1)}{af\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{2c^2\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(3/2)/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (-2*c^2*Tan[e + f*x])/(f*(a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]
]) + (c^2*Log[1 + Cos[e + f*x]]*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]]
*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3908

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-4*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a/c, Int[Sqrt[a +
 b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d,
 e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(c-c\sec(e+fx))^{3/2}}{(a+a\sec(e+fx))^{3/2}}\,dx &= -\frac{2c^2\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{c\int\frac{\sqrt{c-c\sec(e+fx)}}{\sqrt{a+a\sec(e+fx)}}\,dx}{a}\\ &= -\frac{2c^2\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{\left(c^2\tan(e+fx)\right)\operatorname{Subst}\left(\int\frac{1}{a+ax}\,dx,x\right.}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec}}\\ &= -\frac{2c^2\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{c^2\log(1+\cos(e+fx))\tan(e+f}{af\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+}}\end{aligned}$$

Mathematica [C] time = 1.14, size = 114, normalized size = 1.16

$$\frac{ic\cot\left(\frac{1}{2}(e+fx)\right)\sqrt{c-c\sec(e+fx)}\left(2i\log\left(1+e^{i(e+fx)}\right)+\left(fx+2i\log\left(1+e^{i(e+fx)}\right)\right)\cos(e+fx)+fx+2i\right)}{af(\cos(e+fx)+1)\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(3/2)/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (I*c*Cot[(e + f*x)/2]*(2*I + f*x + Cos[e + f*x]*(f*x + (2*I)*Log[1 + E^(I*(
e + f*x))]) + (2*I)*Log[1 + E^(I*(e + f*x))])*Sqrt[c - c*Sec[e + f*x]])/(a*
f*(1 + Cos[e + f*x])*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\left(-c\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^(3/2)/(a^2*sec(f*x
+ e)^2 + 2*a^2*sec(f*x + e) + a^2), x)
```

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((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)2*(-1/2*c*sqrt(-a*c)*(c
*tan(1/2*(f*x+exp(1)))^2-c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1
))))/a^2/abs(c)-1/2*c^2*sqrt(-a*c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*
x+exp(1))))*ln(2*abs(c))/a^2/abs(c)+1/2*c^2*sqrt(-a*c)*sign(tan(1/2*(f*x+ex
p(1)))^3+tan(1/2*(f*x+exp(1))))*ln(abs(c*tan(1/2*(f*x+exp(1)))^2+c))/a^2/ab
s(c))/f
```

maple [A] time = 2.19, size = 106, normalized size = 1.08

$$-\frac{\left(\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)+\cos\left(fx+e\right)+\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-1\right)\left(\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\left(\cos^2\left(fx+e\right)\right)\sqrt{\frac{a\left(1+c\right.}{\mathrm{co}}}}{f\sin\left(fx+e\right)^3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/f*(cos(f*x+e)*ln(2/(1+cos(f*x+e)))+cos(f*x+e)+ln(2/(1+cos(f*x+e)))-1)*(c
*(-1+cos(f*x+e))/cos(f*x+e))^(3/2)*cos(f*x+e)^2*(a*(1+cos(f*x+e))/cos(f*x+e
))^(1/2)/sin(f*x+e)^3/a^2
```

maxima [A] time = 0.73, size = 70, normalized size = 0.71

$$\frac{\frac{c^{\frac{3}{2}}\log\left(\frac{\sin\left(fx+e\right)^{2}}{\left(\cos\left(fx+e\right)+1\right)^{2}}+1\right)}{\sqrt{-a}\,a}-\frac{c^{\frac{3}{2}}\sin\left(fx+e\right)^{2}}{\sqrt{-a}\,a\left(\cos\left(fx+e\right)+1\right)^{2}}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] (c^(3/2)*log(sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)/(sqrt(-a)*a) - c^(3/2
)*sin(f*x + e)^2/(sqrt(-a)*a*(cos(f*x + e) + 1)^2))/f
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{3}{2}}}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(3/2)/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral((-c*(sec(e + f*x) - 1))**(3/2)/(a*(sec(e + f*x) + 1))**(3/2), x)
```

3.120 $\int \frac{\sqrt{c-c\sec(e+fx)}}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=94

$$\frac{c\tan(e+fx)\log(\cos(e+fx)+1)}{af\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{c\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] -c*tan(f*x+e)/f/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2)+c*ln(1+cos(f*
x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {3907, 3911, 31}

$$\frac{c\tan(e+fx)\log(\cos(e+fx)+1)}{af\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{c\tan(e+fx)}{f(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - c*Sec[e + f*x]]/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] -((c*Tan[e + f*x])/(f*(a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]]))
 + (c*Log[1 + Cos[e + f*x]]*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]]*Sqr
t[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{c-c\sec(e+fx)}}{(a+a\sec(e+fx))^{3/2}}\,dx &= -\frac{c\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{\int \frac{\sqrt{c-c\sec(e+fx)}}{\sqrt{a+a\sec(e+fx)}}\,dx}{a}\\ &= -\frac{c\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{(c\tan(e+fx))\operatorname{Subst}\left(\int \frac{1}{a+ax}\,dx,\right.}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec}}\\ &= -\frac{c\tan(e+fx)}{f(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}+\frac{c\log(1+\cos(e+fx))\tan(e+}{af\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(}}\end{aligned}$$

Mathematica [C] time = 0.63, size = 106, normalized size = 1.13

$$\frac{i\cot\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{c-c\sec(e+fx)}\,\left(2i\log\left(1+e^{i(e+fx)}\right)+\left(fx+2i\log\left(1+e^{i(e+fx)}\right)\right)\cos(e+fx)+f\right.}{f(a(\sec(e+fx)+1))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c - c*Sec[e + f*x]]/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (I*Cot[(e + f*x)/2]*(I + f*x + Cos[e + f*x]*(f*x + (2*I)*Log[1 + E^(I*(e +
f*x))]) + (2*I)*Log[1 + E^(I*(e + f*x))])*Sec[e + f*x]*Sqrt[c - c*Sec[e + f
*x]])/(f*(a*(1 + Sec[e + f*x]))^(3/2))
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^2*sec(f*x +
e)^2 + 2*a^2*sec(f*x + e) + a^2), x)
```

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((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)2*sqrt(2)*(-1/4*sqrt(-a
*c)*(c*tan(1/2*(f*x+exp(1)))^2-c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x
+exp(1))))/sqrt(2)/a^2/abs(c)+1/2*c*sqrt(-a*c)*sign(tan(1/2*(f*x+exp(1)))^3
+tan(1/2*(f*x+exp(1))))*ln(abs(2*(c*tan(1/2*(f*x+exp(1)))^2-c)+4*c))/sqrt(2
)/a^2/abs(c))*sign(cos(f*x+exp(1)))/f
```

maple [A] time = 2.30, size = 119, normalized size = 1.27

$$-\frac{\left(2\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)+\cos^2\left(fx+e\right)-2\cos\left(fx+e\right)-2\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)+1\right)\cos\left(fx+e\right)\sqrt{\frac{c(-1\cdots}{\cos\cdots}}}{2f\sin\left(fx+e\right)^3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/2/f*(2*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+cos(f*x+e)^2-2*cos(f*x+e)-2*ln(
2/(1+cos(f*x+e)))+1)*cos(f*x+e)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)*(a*(1+
cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)^3/a^2
```

maxima [B] time = 0.96, size = 395, normalized size = 4.20

$$-\frac{\left(\left(fx+e\right)\cos\left(2fx+2e\right)^2+4\left(fx+e\right)\cos\left(fx+e\right)^2+\left(fx+e\right)\sin\left(2fx+2e\right)^2+4\left(fx+e\right)\sin\left(fx+e\right)^2+\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*cos(2*f*x + 2*e)^2 + 4*(f*x + e)*cos(f*x + e)^2 + (f*x + e)*sin
(2*f*x + 2*e)^2 + 4*(f*x + e)*sin(f*x + e)^2 + f*x - 2*(2*(2*cos(f*x + e) +
 1)*cos(2*f*x + 2*e) + cos(2*f*x + 2*e)^2 + 4*cos(f*x + e)^2 + sin(2*f*x +
2*e)^2 + 4*sin(2*f*x + 2*e)*sin(f*x + e) + 4*sin(f*x + e)^2 + 4*cos(f*x + e
) + 1)*arctan2(sin(f*x + e), cos(f*x + e) + 1) + 2*(f*x + 2*(f*x + e)*cos(f
*x + e) + e - sin(f*x + e))*cos(2*f*x + 2*e) + 4*(f*x + e)*cos(f*x + e) + 2
*(2*(f*x + e)*sin(f*x + e) + cos(f*x + e))*sin(2*f*x + 2*e) + e - 2*sin(f*x
 + e))*sqrt(a)*sqrt(c)/((a^2*cos(2*f*x + 2*e)^2 + 4*a^2*cos(f*x + e)^2 + a^
2*sin(2*f*x + 2*e)^2 + 4*a^2*sin(2*f*x + 2*e)*sin(f*x + e) + 4*a^2*sin(f*x
+ e)^2 + 4*a^2*cos(f*x + e) + a^2 + 2*(2*a^2*cos(f*x + e) + a^2)*cos(2*f*x
+ 2*e))*f)
```

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

$$\int \frac{\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\sqrt{- c \left(\sec{\left(e + f x \right)} - 1\right)}}{\left(a \left(\sec{\left(e + f x \right)} + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(1/2)/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral(sqrt(-c*(sec(e + f*x) - 1))/(a*(sec(e + f*x) + 1))**(3/2), x)
```

3.121 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}\,dx$

Optimal. Leaf size=215

$$-\frac{\tan(e+fx)}{2af(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\tan(e+fx)\log(1-\sec(e+fx))}{4af\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{3}{4af\sqrt{}}$$

```
[Out] ln(cos(f*x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
+1/4*ln(1-sec(f*x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e)
)^(1/2)+3/4*ln(1+sec(f*x+e))*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec
(f*x+e))^(1/2)-1/2*tan(f*x+e)/a/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)/(c-
c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {3912, 72}

$$-\frac{\tan(e+fx)}{2af(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\tan(e+fx)\log(1-\sec(e+fx))}{4af\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{3}{4af\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]]),x]
```

```
[Out] (Log[Cos[e + f*x]]*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*S
ec[e + f*x]]) + (Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(4*a*f*Sqrt[a + a*Sec[
e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (3*Log[1 + Sec[e + f*x]]*Tan[e + f*x]
)/(4*a*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - Tan[e + f*x]/
(2*a*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]
)
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(a+a\sec(e+fx))^{3/2}\sqrt{c-c\sec(e+fx)}}\,dx &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{x(a+ax)^2(c-cx)}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(-\frac{1}{4a^2c(-1+x)}+\frac{1}{a^2cx}-\frac{1}{2a^2c(1+x)^2}-\frac{}{4a^2c}\right.\right.}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= \frac{\log(\cos(e+fx))\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}+\frac{\log(1-\sec(e}{4af\sqrt{a+a\sec(e+}}\end{aligned}$$

Mathematica [C] time = 1.42, size = 141, normalized size = 0.66

$$\frac{\tan(e+fx)\left(\log\left(1-e^{i(e+fx)}\right)+3\log\left(1+e^{i(e+fx)}\right)+\left(\log\left(1-e^{i(e+fx)}\right)+3\log\left(1+e^{i(e+fx)}\right)-2ifx\right)\cos(e+f\right.}{2af(\cos(e+fx)+1)\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]]),x]
```

```
[Out] ((1 - (2*I)*f*x + Log[1 - E^(I*(e + f*x))] + 3*Log[1 + E^(I*(e + f*x))] + C
os[e + f*x]*((-2*I)*f*x + Log[1 - E^(I*(e + f*x))] + 3*Log[1 + E^(I*(e + f*
x))]))*Tan[e + f*x])/(2*a*f*(1 + Cos[e + f*x])*Sqrt[a*(1 + Sec[e + f*x])]*S
qrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sec\left(fx+e\right)+a}\sqrt{-c\sec\left(fx+e\right)+c}}{a^2c\sec\left(fx+e\right)^3+a^2c\sec\left(fx+e\right)^2-a^2c\sec\left(fx+e\right)-a^2c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] integral(-sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^2*c*sec(f*x
 + e)^3 + a^2*c*sec(f*x + e)^2 - a^2*c*sec(f*x + e) - a^2*c), 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(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[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
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/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
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step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
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 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
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step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
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ning, integration of abs or sign assumes constant sign by intervals (correc
t if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
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/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant
sign by intervals (correct if the argument is real):Check [abs(t_nostep^3+t
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 assumes constant sign by intervals (correct if the argument is real):Check
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```
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ion of abs or sign assumes constant sign by intervals (correct if the argum
ent is real):Check [abs(t_nostep^3+t_nostep)]Discontinuities at zeroes of t
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step^2-1)]Warning, integration of abs or sign assumes constant sign by inte
rvals (correct if the argument is real):Check [abs(t_nostep)]Sign error %%%
{c,2%%%}Sign error (%%%{c,0%%%}+%%%{c,2%%%})Evaluation time: 2.37Limit: Max
 order reached or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.43, size = 159, normalized size = 0.74

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-1+\cos\left(fx+e\right)\right)^{2}\left(4\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-2\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\cos\left(fx+e\right)+4\ln\left(\right.\right.}{4f\sqrt{\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\sin\left(fx+e\right)^{3}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))^2*(4*cos(f*x+e)*
ln(2/(1+cos(f*x+e)))-2*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)+4*ln(2/(1
+cos(f*x+e)))+cos(f*x+e)-2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-1)/(c*(-1+cos(f*
x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)^3/a^2
```

maxima [B] time = 0.96, size = 818, normalized size = 3.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] -1/2*(2*(f*x + e)*cos(2*f*x + 2*e)^2 + 8*(f*x + e)*cos(1/2*arctan2(sin(2*f*
x + 2*e), cos(2*f*x + 2*e)))^2 + 2*(f*x + e)*sin(2*f*x + 2*e)^2 + 8*(f*x +
e)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*f*x - 3*(cos(
2*f*x + 2*e)^2 + 4*(cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) + 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + sin(2*f*x + 2*e)^2 + 4*sin(2*f*x + 2*e)*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) + 4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e)))^2 + 2*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
 1) - (cos(2*f*x + 2*e)^2 + 4*(cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))) + 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e)))^2 + sin(2*f*x + 2*e)^2 + 4*sin(2*f*x + 2*e)*sin(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*sin(1/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e)))^2 + 2*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e))) - 1) + 4*(f*x + e)*cos(2*f*x + 2*e) + 2*(4*f*x + 4*(f*x + e)*cos(
```

```
2*f*x + 2*e) + 4*e + sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e))) + 2*(4*(f*x + e)*sin(2*f*x + 2*e) - cos(2*f*x + 2*e) - 1)*
sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*e)/((a*cos(2*f*x +
 2*e)^2 + 4*a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + a*si
n(2*f*x + 2*e)^2 + 4*a*sin(2*f*x + 2*e)*sin(1/2*arctan2(sin(2*f*x + 2*e), c
os(2*f*x + 2*e))) + 4*a*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 2*a*cos(2*f*x + 2*e) + 4*(a*cos(2*f*x + 2*e) + a)*cos(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + a)*sqrt(a)*sqrt(c)*f)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(1/2)),x)
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(1/2)), x)
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**(1/2),x)
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(3/2)*sqrt(-c*(sec(e + f*x) - 1))), x)
```

3.122 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=101

$$\frac{\cot(e+fx)}{2acf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\tan(e+fx)\log(\sin(e+fx))}{acf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] 1/2*cot(f*x+e)/a/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)+ln(sin(f
*x+e))*tan(f*x+e)/a/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3905, 3473, 3475}

$$\frac{\cot(e+fx)}{2acf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\tan(e+fx)\log(\sin(e+fx))}{acf\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(3/2)),x]
```

```
[Out] Cot[e + f*x]/(2*a*c*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) +
(Log[Sin[e + f*x]]*Tan[e + f*x])/(a*c*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*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 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^{3/2}}\,dx &= -\frac{\tan(e+fx)\int \cot^3(e+fx)\,dx}{ac\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= \frac{\cot(e+fx)}{2acf\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}+\frac{\tan(e+f}{ac\sqrt{a+a\sec(e}}\\ &= \frac{\cot(e+fx)}{2acf\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}+\frac{\log(\sin(}{acf\sqrt{a+a\sec(}}\end{aligned}$$

Mathematica [C] time = 1.53, size = 121, normalized size = 1.20

$$\frac{\tan(e+fx)\sec^2(e+fx)\left(\log\left(1-e^{2i(e+fx)}\right)+\left(ifx-\log\left(1-e^{2i(e+fx)}\right)\right)\cos(2(e+fx))-ifx+1\right)}{2cf(\sec(e+fx)-1)(a(\sec(e+fx)+1))^{3/2}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(3/2)),x]
```

```
[Out] ((1 - I*f*x + Cos[2*(e + f*x)]*(I*f*x - Log[1 - E^((2*I)*(e + f*x))]) + Log
[1 - E^((2*I)*(e + f*x))])*Sec[e + f*x]^2*Tan[e + f*x])/(2*c*f*(-1 + Sec[e
+ f*x])*(a*(1 + Sec[e + f*x]))^(3/2)*Sqrt[c - c*Sec[e + f*x]])
```

fricas [B] time = 0.86, size = 492, normalized size = 4.87

$$\left[-\frac{9\sqrt{-ac}\left(\cos\left(fx+e\right)^{2}-1\right)\log\left(-\frac{8\left(\left(256\cos\left(fx+e\right)^{5}-512\cos\left(fx+e\right)^{3}+175\cos\left(fx+e\right)\right)\sqrt{-ac}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\sqrt{\frac{c\cos\left(fx+e\right)-c}{\cos\left(fx+e\right)}}-(25\cdots}{\left(\cos\left(fx+e\right)^{2}-1\right)\sin\left(fx+e\right)}\cdots\right.}{18\left(a^{2}c^{2}f\cos\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="fri
cas")
```

```
[Out] [-1/18*(9*sqrt(-a*c)*(cos(f*x + e)^2 - 1)*log(-8*((256*cos(f*x + e)^5 - 512
*cos(f*x + e)^3 + 175*cos(f*x + e))*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/co
s(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e)) - (256*a*c*cos(f*x + e)
^4 - 512*a*c*cos(f*x + e)^2 + 337*a*c)*sin(f*x + e))/((cos(f*x + e)^2 - 1)*
sin(f*x + e)))*sin(f*x + e) + (16*cos(f*x + e)^3 - 25*cos(f*x + e))*sqrt((a
*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e)))/(
(a^2*c^2*f*cos(f*x + e)^2 - a^2*c^2*f)*sin(f*x + e)), -1/18*(18*sqrt(a*c)*(
cos(f*x + e)^2 - 1)*arctan((16*cos(f*x + e)^3 - 7*cos(f*x + e))*sqrt(a*c)*s
qrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x +
e))/((16*a*c*cos(f*x + e)^2 - 25*a*c)*sin(f*x + e)))*sin(f*x + e) + (16*cos
(f*x + e)^3 - 25*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt
((c*cos(f*x + e) - c)/cos(f*x + e)))/((a^2*c^2*f*cos(f*x + e)^2 - a^2*c^2*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(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="gia
c")
```

```
[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
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/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
```

```
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
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tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
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ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
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pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)War
ning, integration of abs or sign assumes constant sign by intervals (correc
t if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
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tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
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n: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep
/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant
sign by intervals (correct if the argument is real):Check [abs(t_nostep^3+t
_nostep)]Discontinuities at zeroes of t_nostep^3+t_nostep were not checkedU
nable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check si
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tep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_n
ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4
*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Un
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/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nost
ep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to ch
eck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t
_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi
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 assumes constant sign by intervals (correct if the argument is real):Check
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 were not checkedUnable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
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ent is real):Check [abs(t_nostep^3+t_nostep)]Discontinuities at zeroes of t
_nostep^3+t_nostep were not checkedDiscontinuities at zeroes of cos(f*t_nos
tep+exp(1)) were not checkedUnable to check sign: (2*pi/t_nostep/2)>(-2*pi/
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arning, integration of abs or sign assumes constant sign by intervals (corr
ect if the argument is real):Check [abs(t_nostep),abs(t_nostep^2-1)]Warning
, integration of abs or sign assumes constant sign by intervals (correct if
 the argument is real):Check [abs(t_nostep)]Sign error (%%%{c,0%%%}+%%%{c,2
%%%})Sign error %%%{-c,2%%%}Evaluation time: 2.4Limit: Max order reached or
 unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.39, size = 173, normalized size = 1.71

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)^{2}\left(4\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)-4\left(\cos^{2}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+\cos^{2}\left(fx+e\right)-}{4f\sin\left(fx+e\right)^{3}\left(\frac{c\left(-1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\cos\left(fx+e\right)a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/4/f*(-1+cos(f*x+e))^2*(4*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2-4*cos(f*x+e)^
2*ln(-(-1+cos(f*x+e))/sin(f*x+e))+cos(f*x+e)^2-4*ln(2/(1+cos(f*x+e)))+4*ln(
-(-1+cos(f*x+e))/sin(f*x+e))+1)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x
+e)^3/(c*(-1+cos(f*x+e))/cos(f*x+e))^(3/2)/cos(f*x+e)/a^2
```

maxima [B] time = 0.88, size = 486, normalized size = 4.81

$$-\frac{\left(\left(fx+e\right)\cos\left(4fx+4e\right)^{2}+4\left(fx+e\right)\cos\left(2fx+2e\right)^{2}+\left(fx+e\right)\sin\left(4fx+4e\right)^{2}+4\left(fx+e\right)\sin\left(2fx+2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="max
ima")
```

```
[Out] -((f*x + e)*cos(4*f*x + 4*e)^2 + 4*(f*x + e)*cos(2*f*x + 2*e)^2 + (f*x + e)
*sin(4*f*x + 4*e)^2 + 4*(f*x + e)*sin(2*f*x + 2*e)^2 + f*x + (2*(2*cos(2*f*
x + 2*e) - 1)*cos(4*f*x + 4*e) - cos(4*f*x + 4*e)^2 - 4*cos(2*f*x + 2*e)^2
```

```
- sin(4*f*x + 4*e)^2 + 4*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) - 4*sin(2*f*x +
2*e)^2 + 4*cos(2*f*x + 2*e) - 1)*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
 - 1) + 2*(f*x - 2*(f*x + e)*cos(2*f*x + 2*e) + e + sin(2*f*x + 2*e))*cos(4
*f*x + 4*e) - 4*(f*x + e)*cos(2*f*x + 2*e) - 2*(2*(f*x + e)*sin(2*f*x + 2*e
) + cos(2*f*x + 2*e))*sin(4*f*x + 4*e) + e + 2*sin(2*f*x + 2*e))*sqrt(a)*sq
rt(c)/((a^2*c^2*cos(4*f*x + 4*e)^2 + 4*a^2*c^2*cos(2*f*x + 2*e)^2 + a^2*c^2
*sin(4*f*x + 4*e)^2 - 4*a^2*c^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 4*a^2*c
^2*sin(2*f*x + 2*e)^2 - 4*a^2*c^2*cos(2*f*x + 2*e) + a^2*c^2 - 2*(2*a^2*c^2
*cos(2*f*x + 2*e) - a^2*c^2)*cos(4*f*x + 4*e))*f)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(3/2)), x)
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(3/2)*(-c*(sec(e + f*x) - 1))**(3/2)),
x)
```

3.123 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=347

$$-\frac{\tan(e+fx)}{2ac^2f(1-\sec(e+fx))\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{8ac^2f(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c}}$$

```
[Out] ln(cos(f*x+e))*tan(f*x+e)/a/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)+11/16*ln(1-sec(f*x+e))*tan(f*x+e)/a/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*
sec(f*x+e))^(1/2)+5/16*ln(1+sec(f*x+e))*tan(f*x+e)/a/c^2/f/(a+a*sec(f*x+e))
^(1/2)/(c-c*sec(f*x+e))^(1/2)-1/8*tan(f*x+e)/a/c^2/f/(1-sec(f*x+e))^2/(a+a*
sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-1/2*tan(f*x+e)/a/c^2/f/(1-sec(f*x+
e))/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-1/8*tan(f*x+e)/a/c^2/f/(1
+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = {3912, 88}

$$-\frac{\tan(e+fx)}{2ac^2f(1-\sec(e+fx))\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{8ac^2f(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(5/2)),x]
```

```
[Out] (Log[Cos[e + f*x]]*Tan[e + f*x])/(a*c^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) + (11*Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(16*a*c^2*f*Sqr
t[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (5*Log[1 + Sec[e + f*x]]*
Tan[e + f*x])/(16*a*c^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]
) - Tan[e + f*x]/(8*a*c^2*f*(1 - Sec[e + f*x])^2*Sqrt[a + a*Sec[e + f*x]]*S
qrt[c - c*Sec[e + f*x]]) - Tan[e + f*x]/(2*a*c^2*f*(1 - Sec[e + f*x])*Sqrt[
a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - Tan[e + f*x]/(8*a*c^2*f*(1
+ Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^{5/2}}\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{x(a+ax)^2(c-cx)^3}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$
$$= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(-\frac{1}{4a^2c^3(-1+x)^3}+\frac{1}{2a^2c^3(-1+x)^2}-\frac{1}{\ldots}\right.\right.}{f\sqrt{a+a\sec(e+\ldots}}$$
$$= \frac{\log(\cos(e+fx))\tan(e+fx)}{ac^2f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}} + \frac{11\log(\ldots}{16ac^2f\sqrt{a+\ldots}}$$

Mathematica [C] time = 2.62, size = 275, normalized size = 0.79

$$\frac{\tan(e+fx)\left(22\log\left(1-e^{i(e+fx)}\right)+10\log\left(1+e^{i(e+fx)}\right)-8ifx\cos(3(e+fx))+11\log\left(1-e^{i(e+fx)}\right)\cos(3(e+\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^(5/2)),x]
```

```
[Out] ((14 - (16*I)*f*x - (8*I)*f*x*Cos[3*(e + f*x)] + 22*Log[1 - E^(I*(e + f*x))
] + 11*Cos[3*(e + f*x)]*Log[1 - E^(I*(e + f*x))] + Cos[e + f*x]*(-12 + (8*I
)*f*x - 11*Log[1 - E^(I*(e + f*x))] - 5*Log[1 + E^(I*(e + f*x))]) + 2*Cos[2
*(e + f*x)]*(-5 + (8*I)*f*x - 11*Log[1 - E^(I*(e + f*x))] - 5*Log[1 + E^(I*
(e + f*x))]) + 10*Log[1 + E^(I*(e + f*x))] + 5*Cos[3*(e + f*x)]*Log[1 + E^(
I*(e + f*x))])*Tan[e + f*x])/(32*a*c^2*f*(-1 + Cos[e + f*x])^2*(1 + Cos[e +
 f*x])*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.80, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sec\left(fx+e\right)+a}\sqrt{-c\sec\left(fx+e\right)+c}}{a^2c^3\sec\left(fx+e\right)^5-a^2c^3\sec\left(fx+e\right)^4-2\,a^2c^3\sec\left(fx+e\right)^3+2\,a^2c^3\sec\left(fx+e\right)^2+a^2c^3\sec\left(fx\ldots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="fri
cas")
```

```
[Out] integral(-sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^2*c^3*sec(f
*x + e)^5 - a^2*c^3*sec(f*x + e)^4 - 2*a^2*c^3*sec(f*x + e)^3 + 2*a^2*c^3*s
ec(f*x + e)^2 + a^2*c^3*sec(f*x + e) - a^2*c^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(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="gia
c")
```

```
[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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ostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t
_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable
to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4
*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(
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Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check s
ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nost
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ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
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ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
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step/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_noste
p/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to che
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tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning,
integration of abs or sign assumes constant sign by intervals (correct if t
he argument is real):Check [abs(t_nostep^3+t_nostep)]Discontinuities at zer
oes of t_nostep^3+t_nostep were not checkedUnable to check sign: (4*pi/t_no
step/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_
nostep/2)Warning, integration of abs or sign assumes constant sign by inter
vals (correct if the argument is real):Check [abs(t_nostep^3+t_nostep)]Disc
ontinuities at zeroes of t_nostep^3+t_nostep were not checkedDiscontinuitie
s at zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to check sign:
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o check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi
/x/2)Warning, integration of abs or sign assumes constant sign by intervals
 (correct if the argument is real):Check [abs(t_nostep),abs(t_nostep^2-1)]W
arning, integration of abs or sign assumes constant sign by intervals (corr
ect if the argument is real):Check [abs(t_nostep)]Evaluation time: 2.99inde
x.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [A] time = 2.95, size = 293, normalized size = 0.84

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)^{2}\left(32\left(\cos^{3}\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-44\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^{3}\left(fx+e\right)\right)-32\ln\left(\frac{2}{1+\cos(}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/32/f*(-1+cos(f*x+e))^2*(32*cos(f*x+e)^3*ln(2/(1+cos(f*x+e)))-44*ln(-(-1+
cos(f*x+e))/sin(f*x+e))*cos(f*x+e)^3-32*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+4
```

```
4*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))+13*cos(f*x+e)^3-32*cos(f*x+e
)*ln(2/(1+cos(f*x+e)))+44*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)+7*cos(
f*x+e)^2+32*ln(2/(1+cos(f*x+e)))-44*ln(-(-1+cos(f*x+e))/sin(f*x+e))-cos(f*x
+e)-11)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/(c*(-1+cos(f*x+e))/cos(f*x+e))^
(5/2)/sin(f*x+e)^3/cos(f*x+e)^2/a^2
```

maxima [B] time = 4.18, size = 4272, normalized size = 12.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="max
ima")
```

```
[Out] -1/8*(8*(f*x + e)*cos(6*f*x + 6*e)^2 + 8*(f*x + e)*cos(4*f*x + 4*e)^2 + 8*(
f*x + e)*cos(2*f*x + 2*e)^2 + 32*(f*x + e)*cos(5/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e)))^2 + 128*(f*x + e)*cos(3/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e)))^2 + 32*(f*x + e)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e)))^2 + 8*(f*x + e)*sin(6*f*x + 6*e)^2 + 8*(f*x + e)*sin(4*f*x + 4*
e)^2 + 8*(f*x + e)*sin(2*f*x + 2*e)^2 + 32*(f*x + e)*sin(5/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e)))^2 + 128*(f*x + e)*sin(3/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 32*(f*x + e)*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))^2 + 8*f*x + 5*(2*(cos(4*f*x + 4*e) + cos(2*f*x + 2*e)
 - 1)*cos(6*f*x + 6*e) - cos(6*f*x + 6*e)^2 - 2*(cos(2*f*x + 2*e) - 1)*cos(
4*f*x + 4*e) - cos(4*f*x + 4*e)^2 - cos(2*f*x + 2*e)^2 + 4*(cos(6*f*x + 6*e
) - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) + 4*cos(3/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) - 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))) + 1)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*cos(5/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 8*(cos(6*f*x + 6*e) - cos(4
*f*x + 4*e) - cos(2*f*x + 2*e) - 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16
*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*(cos(6*f*x + 6*
e) - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e)))^2 + 2*(sin(4*f*x + 4*e) + sin(2*f*x + 2*e))*sin(6*f*x + 6*e) - sin(6*
f*x + 6*e)^2 - sin(4*f*x + 4*e)^2 - 2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) - s
in(2*f*x + 2*e)^2 + 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*
e) + 4*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) - 4*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
))^2 - 8*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e) - 2*sin(1/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) - 16*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
+ 2*e)))^2 + 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e))*sin
(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*sin(1/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*cos(2*f*x + 2*e) - 1)*arctan2(sin(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) + 1) + 11*(2*(cos(4*f*x + 4*e) + cos(2*f*x + 2*e)
- 1)*cos(6*f*x + 6*e) - cos(6*f*x + 6*e)^2 - 2*(cos(2*f*x + 2*e) - 1)*cos(4
*f*x + 4*e) - cos(4*f*x + 4*e)^2 - cos(2*f*x + 2*e)^2 + 4*(cos(6*f*x + 6*e)
 - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) + 4*cos(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) - 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*cos(5/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 8*(cos(6*f*x + 6*e) - cos(4*
f*x + 4*e) - cos(2*f*x + 2*e) - 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16*
cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*(cos(6*f*x + 6*e
) - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) - 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))^2 + 2*(sin(4*f*x + 4*e) + sin(2*f*x + 2*e))*sin(6*f*x + 6*e) - sin(6*f
```

```
*x + 6*e)^2 - sin(4*f*x + 4*e)^2 - 2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) - si
n(2*f*x + 2*e)^2 + 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e
) + 4*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) - 4*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 - 8*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e) - 2*sin(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - 16*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 + 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e))*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*cos(2*f*x + 2*e) - 1)*arctan2(sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 1) + 4*(4*f*x - 4*(f*x + e)*cos(4*f*x + 4*e) - 4*
(f*x + e)*cos(2*f*x + 2*e) + 4*e + 3*sin(4*f*x + 4*e) + 3*sin(2*f*x + 2*e))
*cos(6*f*x + 6*e) - 16*(f*x - (f*x + e)*cos(2*f*x + 2*e) + e)*cos(4*f*x + 4
*e) - 16*(f*x + e)*cos(2*f*x + 2*e) - 2*(16*f*x + 16*(f*x + e)*cos(6*f*x +
6*e) - 16*(f*x + e)*cos(4*f*x + 4*e) - 16*(f*x + e)*cos(2*f*x + 2*e) + 64*(
f*x + e)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 32*(f*x + e
)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*e + 5*sin(6*f*x
 + 6*e) + 7*sin(4*f*x + 4*e) + 7*sin(2*f*x + 2*e) - 8*sin(3/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))))*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 4*(16*f*x + 16*(f*x + e)*cos(6*f*x + 6*e) - 16*(f*x + e)*cos(4
*f*x + 4*e) - 16*(f*x + e)*cos(2*f*x + 2*e) - 32*(f*x + e)*cos(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*e + 7*sin(6*f*x + 6*e) + 5*sin(4*
f*x + 4*e) + 5*sin(2*f*x + 2*e) - 4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*(16
*f*x + 16*(f*x + e)*cos(6*f*x + 6*e) - 16*(f*x + e)*cos(4*f*x + 4*e) - 16*(
f*x + e)*cos(2*f*x + 2*e) + 16*e + 5*sin(6*f*x + 6*e) + 7*sin(4*f*x + 4*e)
+ 7*sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
- 4*(4*(f*x + e)*sin(4*f*x + 4*e) + 4*(f*x + e)*sin(2*f*x + 2*e) + 3*cos(4*
f*x + 4*e) + 3*cos(2*f*x + 2*e))*sin(6*f*x + 6*e) + 4*(4*(f*x + e)*sin(2*f*
x + 2*e) + 3)*sin(4*f*x + 4*e) - 2*(16*(f*x + e)*sin(6*f*x + 6*e) - 16*(f*x
 + e)*sin(4*f*x + 4*e) - 16*(f*x + e)*sin(2*f*x + 2*e) + 64*(f*x + e)*sin(3
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 32*(f*x + e)*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 5*cos(6*f*x + 6*e) - 7*cos(4*f*x
 + 4*e) - 7*cos(2*f*x + 2*e) + 8*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) - 5)*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*(1
6*(f*x + e)*sin(6*f*x + 6*e) - 16*(f*x + e)*sin(4*f*x + 4*e) - 16*(f*x + e)
*sin(2*f*x + 2*e) - 32*(f*x + e)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) - 7*cos(6*f*x + 6*e) - 5*cos(4*f*x + 4*e) - 5*cos(2*f*x + 2*e) +
 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 7)*sin(3/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*(16*(f*x + e)*sin(6*f*x + 6*e) -
 16*(f*x + e)*sin(4*f*x + 4*e) - 16*(f*x + e)*sin(2*f*x + 2*e) - 5*cos(6*f*
x + 6*e) - 7*cos(4*f*x + 4*e) - 7*cos(2*f*x + 2*e) - 5)*sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*e + 12*sin(2*f*x + 2*e))/((a*c^2*cos(
6*f*x + 6*e)^2 + a*c^2*cos(4*f*x + 4*e)^2 + a*c^2*cos(2*f*x + 2*e)^2 + 4*a*
c^2*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*a*c^2*cos(3
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*a*c^2*cos(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + a*c^2*sin(6*f*x + 6*e)^2 + a*c^2*
sin(4*f*x + 4*e)^2 + 2*a*c^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + a*c^2*sin(
2*f*x + 2*e)^2 + 4*a*c^2*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
))^2 + 16*a*c^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*
a*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*a*c^2*cos(
2*f*x + 2*e) + a*c^2 - 2*(a*c^2*cos(4*f*x + 4*e) + a*c^2*cos(2*f*x + 2*e) -
 a*c^2)*cos(6*f*x + 6*e) + 2*(a*c^2*cos(2*f*x + 2*e) - a*c^2)*cos(4*f*x + 4
*e) - 4*(a*c^2*cos(6*f*x + 6*e) - a*c^2*cos(4*f*x + 4*e) - a*c^2*cos(2*f*x
+ 2*e) + 4*a*c^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 2*a
*c^2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a*c^2)*cos(5/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*(a*c^2*cos(6*f*x + 6*e) -
```

```
a*c^2*cos(4*f*x + 4*e) - a*c^2*cos(2*f*x + 2*e) - 2*a*c^2*cos(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + a*c^2)*cos(3/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) - 4*(a*c^2*cos(6*f*x + 6*e) - a*c^2*cos(4*f*x + 4*e)
 - a*c^2*cos(2*f*x + 2*e) + a*c^2)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) - 2*(a*c^2*sin(4*f*x + 4*e) + a*c^2*sin(2*f*x + 2*e))*sin(6*f*
x + 6*e) - 4*(a*c^2*sin(6*f*x + 6*e) - a*c^2*sin(4*f*x + 4*e) - a*c^2*sin(2
*f*x + 2*e) + 4*a*c^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
- 2*a*c^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*(a*c^2*sin(6*f*x + 6*e) - a*c
^2*sin(4*f*x + 4*e) - a*c^2*sin(2*f*x + 2*e) - 2*a*c^2*sin(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) - 4*(a*c^2*sin(6*f*x + 6*e) - a*c^2*sin(4*f*x + 4*e) - a*c^2*si
n(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(
a)*sqrt(c)*f)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^(5/2)),x)
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c - c/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/(a+a*sec(f*x+e))**(3/2)/(c-c*sec(f*x+e))**(5/2),x)
[Out] Timed out
```

3.124 $\int \frac{(c-c\sec(e+fx))^{7/2}}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=220

$$\frac{4c^4\tan(e+fx)}{a^2f(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{4c^4\tan(e+fx)}{a^2f(\sec(e+fx)+1)^2\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(}}$$

```
[Out] c^4*ln(cos(f*x+e))*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))
^(1/2)+2*c^4*ln(1+sec(f*x+e))*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*
sec(f*x+e))^(1/2)-4*c^4*tan(f*x+e)/a^2/f/(1+sec(f*x+e))^2/(a+a*sec(f*x+e))^
(1/2)/(c-c*sec(f*x+e))^(1/2)+4*c^4*tan(f*x+e)/a^2/f/(1+sec(f*x+e))/(a+a*sec
(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = {3912, 88}

$$\frac{4c^4\tan(e+fx)}{a^2f(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{4c^4\tan(e+fx)}{a^2f(\sec(e+fx)+1)^2\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(7/2)/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (c^4*Log[Cos[e + f*x]]*Tan[e + f*x])/(a^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c
 - c*Sec[e + f*x]]) + (2*c^4*Log[1 + Sec[e + f*x]]*Tan[e + f*x])/(a^2*f*Sqr
t[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - (4*c^4*Tan[e + f*x])/(a^2
*f*(1 + Sec[e + f*x])^2*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
+ (4*c^4*Tan[e + f*x])/(a^2*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]*S
qrt[c - c*Sec[e + f*x]])
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(c-c\sec(e+fx))^{7/2}}{(a+a\sec(e+fx))^{5/2}}\,dx &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^3}{x(a+ax)^3}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\ &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int\left(\frac{c^3}{a^3x}-\frac{8c^3}{a^3(1+x)^3}+\frac{4c^3}{a^3(1+x)^2}-\frac{2c^3}{a^3(1+x)}\right)dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\ &= \frac{c^4\log(\cos(e+fx))\tan(e+fx)}{a^2f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}+\frac{2c^4\log(1+\sec(e+fx))\tan(e+f}{a^2f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+}}\end{aligned}$$

Mathematica [C] time = 2.54, size = 157, normalized size = 0.71

$$\frac{c^3\cot\left(\frac{1}{2}(e+fx)\right)\sqrt{c-c\sec(e+fx)}\left(4\left(-4\log\left(1+e^{i(e+fx)}\right)+\log\left(1+e^{2i(e+fx)}\right)+ifx-2\right)\cos(e+fx)+\left(-\right.\right.}{2a^2f(\cos(e+fx)+1)^2\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(7/2)/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (c^3*Cot[(e + f*x)/2]*(4*Cos[e + f*x]*(-2 + I*f*x - 4*Log[1 + E^(I*(e + f*x
))] + Log[1 + E^((2*I)*(e + f*x))]) + (3 + Cos[2*(e + f*x)])*(I*f*x - 4*Log
[1 + E^(I*(e + f*x))] + Log[1 + E^((2*I)*(e + f*x))]))*Sqrt[c - c*Sec[e + f
*x]])/(2*a^2*f*(1 + Cos[e + f*x])^2*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^3\sec\left(fx+e\right)^3-3\,c^3\sec\left(fx+e\right)^2+3\,c^3\sec\left(fx+e\right)-c^3\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right.}}{a^3\sec\left(fx+e\right)^3+3\,a^3\sec\left(fx+e\right)^2+3\,a^3\sec\left(fx+e\right)+a^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral(-(c^3*sec(f*x + e)^3 - 3*c^3*sec(f*x + e)^2 + 3*c^3*sec(f*x + e) -
 c^3)*sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^3*sec(f*x + e)^
3 + 3*a^3*sec(f*x + e)^2 + 3*a^3*sec(f*x + e) + a^3), x)
```

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((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)c*(a^2*sqrt(-a*c)*(c*tan(1/2*(f*x+ex
p(1)))^2-c)^2*abs(c)+2*a^2*c*sqrt(-a*c)*(c*tan(1/2*(f*x+exp(1)))^2-c)*abs(c
))*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))/a^5/c/f
```

maple [A] time = 2.60, size = 338, normalized size = 1.54

$$\left(\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)+\ln\left(-\frac{-1+\cos\left(fx+e\right)+\sin\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)+\ln\left(-\frac{-\sin\left(fx+e\right)-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] 1/f*(ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+ln(-(-1+cos(f*x+e)+sin(f*x+e))/sin(f
*x+e))*cos(f*x+e)^2+ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)^2
+2*cos(f*x+e)*ln(2/(1+cos(f*x+e)))+cos(f*x+e)^2+2*cos(f*x+e)*ln(-(-1+cos(f*
x+e)+sin(f*x+e))/sin(f*x+e))+2*cos(f*x+e)*ln(-(-sin(f*x+e)-1+cos(f*x+e))/si
n(f*x+e))+ln(2/(1+cos(f*x+e)))-2*cos(f*x+e)+ln(-(-1+cos(f*x+e)+sin(f*x+e))/
sin(f*x+e))+ln(-(-sin(f*x+e)-1+cos(f*x+e))/sin(f*x+e))+1)*(c*(-1+cos(f*x+e)
```

```
)/cos(f*x+e))^(7/2)*cos(f*x+e)^4*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*
x+e)^5/(-1+cos(f*x+e))/a^3
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(7/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{7/2}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(7/2)/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(7/2)/(a + a/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((c-c*sec(f*x+e))**(7/2)/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.125 $\int \frac{(c-c\sec(e+fx))^{5/2}}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=98

$$\frac{c^3\tan(e+fx)\log(\cos(e+fx)+1)}{a^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{2c^3\tan(e+fx)}{f(a\sec(e+fx)+a)^{5/2}\sqrt{c-c\sec(e+fx)}}$$

```
[Out] -2*c^3*tan(f*x+e)/f/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2)+c^3*ln(1+
cos(f*x+e))*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3910, 3911, 31}

$$\frac{c^3\tan(e+fx)\log(\cos(e+fx)+1)}{a^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{2c^3\tan(e+fx)}{f(a\sec(e+fx)+a)^{5/2}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(5/2)/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (-2*c^3*Tan[e + f*x])/(f*(a + a*Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]
]) + (c^3*Log[1 + Cos[e + f*x]]*Tan[e + f*x])/(a^2*f*Sqrt[a + a*Sec[e + f*x
]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3910

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(5/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-8*a^3*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a^2/c^2, Int[Sqrt
[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 2), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(c-c\sec(e+fx))^{5/2}}{(a+a\sec(e+fx))^{5/2}}\,dx &= -\frac{2c^3\tan(e+fx)}{f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}}+\frac{c^2\int \frac{\sqrt{c-c\sec(e+fx)}}{\sqrt{a+a\sec(e+fx)}}\,dx}{a^2}\\ &= -\frac{2c^3\tan(e+fx)}{f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}}+\frac{\left(c^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{a+ax}\,dx\right.}{af\sqrt{a+a\sec(e+fx)}\sqrt{c-c}}\\ &= -\frac{2c^3\tan(e+fx)}{f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}}+\frac{c^3\log(1+\cos(e+fx))\tan(e}{a^2f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec}}\end{aligned}$$

Mathematica [C] time = 1.57, size = 154, normalized size = 1.57

$$\frac{ic^2\cot\left(\frac{1}{2}(e+fx)\right)\sqrt{c-c\sec(e+fx)}\left(6i\log\left(1+e^{i(e+fx)}\right)+\left(fx+2i\log\left(1+e^{i(e+fx)}\right)\right)\cos(2(e+fx))+4\left(2i\log\right.\right.}{2a^2f(\cos(e+fx)+1)^2\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(5/2)/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((I/2)*c^2*Cot[(e + f*x)/2]*(4*I + 3*f*x + Cos[2*(e + f*x)]*(f*x + (2*I)*Lo
g[1 + E^(I*(e + f*x))]) + 4*Cos[e + f*x]*(2*I + f*x + (2*I)*Log[1 + E^(I*(e
 + f*x))]) + (6*I)*Log[1 + E^(I*(e + f*x))])*Sqrt[c - c*Sec[e + f*x]])/(a^2
*f*(1 + Cos[e + f*x])^2*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^2\sec\left(fx+e\right)^2-2\,c^2\sec\left(fx+e\right)+c^2\right)\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{a^3\sec\left(fx+e\right)^3+3\,a^3\sec\left(fx+e\right)^2+3\,a^3\sec\left(fx+e\right)+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral((c^2*sec(f*x + e)^2 - 2*c^2*sec(f*x + e) + c^2)*sqrt(a*sec(f*x + e
) + a)*sqrt(-c*sec(f*x + e) + c)/(a^3*sec(f*x + e)^3 + 3*a^3*sec(f*x + e)^2
 + 3*a^3*sec(f*x + e) + a^3), x)
```

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((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)2*(-1/2*c^3*sqrt(-a*c)*
sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))*ln(2*abs(c))/a^3/abs(c)
+1/2*c^3*sqrt(-a*c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))*ln(
abs(c*tan(1/2*(f*x+exp(1)))^2+c))/a^3/abs(c)+1/4*sqrt(-a*c)*(c*tan(1/2*(f*x
+exp(1)))^2-c)^2*abs(c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))
/a^3/c)/f
```

maple [A] time = 2.75, size = 144, normalized size = 1.47

$$\frac{\left(2\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^2\left(fx+e\right)\right)+3\left(\cos^2\left(fx+e\right)\right)+4\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-2\cos\left(fx+e\right)+2\ln\left(\frac{}{1\cdot}\right.\right.}{2f\sin\left(fx+e\right)^5a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] 1/2/f*(2*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+3*cos(f*x+e)^2+4*cos(f*x+e)*ln(2
/(1+cos(f*x+e)))-2*cos(f*x+e)+2*ln(2/(1+cos(f*x+e)))-1)*(c*(-1+cos(f*x+e))/
```

```
cos(f*x+e))^(5/2)*cos(f*x+e)^3*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+
e)^5/a^3
```

maxima [A] time = 0.71, size = 102, normalized size = 1.04

$$\frac{\frac{2\,c^{\frac{5}{2}}\log\left(\frac{\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}+1\right)}{\sqrt{-a}\,a^2}+\frac{\frac{2\,\sqrt{-a}\,c^{\frac{5}{2}}\sin\left(fx+e\right)^2}{\left(\cos\left(fx+e\right)+1\right)^2}-\frac{\sqrt{-a}\,c^{\frac{5}{2}}\sin\left(fx+e\right)^4}{\left(\cos\left(fx+e\right)+1\right)^4}}{a^3}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(5/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/2*(2*c^(5/2)*log(sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 1)/(sqrt(-a)*a^2)
+ (2*sqrt(-a)*c^(5/2)*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 - sqrt(-a)*c^(5/2
)*sin(f*x + e)^4/(cos(f*x + e) + 1)^4)/a^3)/f
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(5/2)/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c - c/cos(e + f*x))^(5/2)/(a + a/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((c-c*sec(f*x+e))**(5/2)/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.126 $\int \frac{(c-c\sec(e+fx))^{3/2}}{(a+a\sec(e+fx))^{5/2}} \, dx$

Optimal. Leaf size=144

$$\frac{c^2\tan(e+fx)\log(\cos(e+fx)+1)}{a^2 f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{c^2\tan(e+fx)}{af(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}-\frac{c^2\tan(e+}{f(a\sec(e+fx)+a)^{5/2}\sqrt{}}$$

```
[Out] -c^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2)-c^2*tan(f*x
+e)/a/f/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2)+c^2*ln(1+cos(f*x+e))*
tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {3908, 3907, 3911, 31}

$$\frac{c^2\tan(e+fx)\log(\cos(e+fx)+1)}{a^2 f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}}-\frac{c^2\tan(e+fx)}{af(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}}-\frac{c^2\tan(e+}{f(a\sec(e+fx)+a)^{5/2}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^(3/2)/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] -((c^2*Tan[e + f*x])/(f*(a + a*Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]]
)) - (c^2*Tan[e + f*x])/(a*f*(a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e +
f*x]]) + (c^2*Log[1 + Cos[e + f*x]]*Tan[e + f*x])/(a^2*f*Sqrt[a + a*Sec[e +
 f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3908

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-4*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a/c, Int[Sqrt[a +
 b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d,
 e, f}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^{3/2}}{(a+a\sec(e+fx))^{5/2}}\,dx = -\frac{c^2\tan(e+fx)}{f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} + \frac{c\int \frac{\sqrt{c-c\sec(e+fx)}}{(a+a\sec(e+fx))^{3/2}}\,dx}{a}$$

$$= -\frac{c^2\tan(e+fx)}{f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} - \frac{c^2\tan(e+fx)}{af(a+a\sec(e+fx))^{3/2}\sqrt{c-c\,\text{se}}}$$

$$= -\frac{c^2\tan(e+fx)}{f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} - \frac{c^2\tan(e+fx)}{af(a+a\sec(e+fx))^{3/2}\sqrt{c-c\,\text{se}}}$$

$$= -\frac{c^2\tan(e+fx)}{f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} - \frac{c^2\tan(e+fx)}{af(a+a\sec(e+fx))^{3/2}\sqrt{c-c\,\text{se}}}$$

Mathematica [C] time = 0.87, size = 152, normalized size = 1.06

$$\frac{ic\cot\left(\frac{1}{2}(e+fx)\right)\sqrt{c-c\sec(e+fx)}\,\left(6i\log\left(1+e^{i(e+fx)}\right)+\left(fx+2i\log\left(1+e^{i(e+fx)}\right)\right)\cos(2(e+fx))+\left(8i\log\right.\right.}{2a^2f(\cos(e+fx)+1)^2\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - c*Sec[e + f*x])^(3/2)/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((I/2)*c*Cot[(e + f*x)/2]*(4*I + 3*f*x + Cos[2*(e + f*x)]*(f*x + (2*I)*Log[
1 + E^(I*(e + f*x))]) + Cos[e + f*x]*(6*I + 4*f*x + (8*I)*Log[1 + E^(I*(e +
 f*x))]) + (6*I)*Log[1 + E^(I*(e + f*x))])*Sqrt[c - c*Sec[e + f*x]])/(a^2*f
*(1 + Cos[e + f*x])^2*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\left(-c\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{a^3\sec\left(fx+e\right)^3+3\,a^3\sec\left(fx+e\right)^2+3\,a^3\sec\left(fx+e\right)+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^(3/2)/(a^3*sec(f*x
+ e)^3 + 3*a^3*sec(f*x + e)^2 + 3*a^3*sec(f*x + e) + a^3), x)
```

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((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)2*(1/16*(2*a^3*sqrt(-a*c)*(c*tan(1/2*(f*x+exp(1)))^2-c
)^2*abs(c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))-4*a^3*c*sqrt
(-a*c)*(c*tan(1/2*(f*x+exp(1)))^2-c)*abs(c)*sign(tan(1/2*(f*x+exp(1)))^3+ta
```

```
n(1/2*(f*x+exp(1)))))/a^6/c^2-1/2*c^2*sqrt(-a*c)*sign(tan(1/2*(f*x+exp(1)))
^3+tan(1/2*(f*x+exp(1))))*ln(2*abs(c))/a^3/abs(c)+1/2*c^2*sqrt(-a*c)*sign(t
an(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))*ln(abs(c*tan(1/2*(f*x+exp(1))
)^2+c))/a^3/abs(c))/f
```

maple [A] time = 2.65, size = 152, normalized size = 1.06

$$\frac{\left(-1+\cos\left(fx+e\right)\right)\left(4\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)+5\left(\cos^{2}\left(fx+e\right)\right)+8\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-2\,\mathrm{cc}}{4f\sin\left(fx+e\right)^{5}a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] 1/4/f*(-1+cos(f*x+e))*(4*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+5*cos(f*x+e)^2+8
*cos(f*x+e)*ln(2/(1+cos(f*x+e)))-2*cos(f*x+e)+4*ln(2/(1+cos(f*x+e)))-3)*(c*
(-1+cos(f*x+e))/cos(f*x+e))^(3/2)*cos(f*x+e)^2*(a*(1+cos(f*x+e))/cos(f*x+e)
)^(1/2)/sin(f*x+e)^5/a^3
```

maxima [B] time = 1.15, size = 1786, normalized size = 12.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*c*cos(4*f*x + 4*e)^2 + 36*(f*x + e)*c*cos(2*f*x + 2*e)^2 + 16*(
f*x + e)*c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*(f*x
 + e)*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + (f*x + e)*
c*sin(4*f*x + 4*e)^2 + 36*(f*x + e)*c*sin(2*f*x + 2*e)^2 + 16*(f*x + e)*c*s
in(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*(f*x + e)*c*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 12*(f*x + e)*c*cos(2*f
*x + 2*e) + (f*x + e)*c - 2*(c*cos(4*f*x + 4*e)^2 + 36*c*cos(2*f*x + 2*e)^2
 + 16*c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*c*cos(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + c*sin(4*f*x + 4*e)^2 +
12*c*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*c*sin(2*f*x + 2*e)^2 + 16*c*sin
(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*c*sin(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*(6*c*cos(2*f*x + 2*e) + c)*cos(4
*f*x + 4*e) + 12*c*cos(2*f*x + 2*e) + 8*(c*cos(4*f*x + 4*e) + 6*c*cos(2*f*x
 + 2*e) + 4*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + c)*cos
(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*(c*cos(4*f*x + 4*e) +
 6*c*cos(2*f*x + 2*e) + c)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 8*(c*sin(4*f*x + 4*e) + 6*c*sin(2*f*x + 2*e) + 4*c*sin(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(
2*f*x + 2*e))) + 8*(c*sin(4*f*x + 4*e) + 6*c*sin(2*f*x + 2*e))*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + c)*arctan2(sin(1/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) + 1) + 2*(6*(f*x + e)*c*cos(2*f*x + 2*e) + (f*x + e)*c - 4*c*sin
(2*f*x + 2*e))*cos(4*f*x + 4*e) + 2*(4*(f*x + e)*c*cos(4*f*x + 4*e) + 24*(f
*x + e)*c*cos(2*f*x + 2*e) + 16*(f*x + e)*c*cos(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) + 4*(f*x + e)*c + 3*c*sin(4*f*x + 4*e) + 2*c*sin(2*f*
x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(4*(f*x
+ e)*c*cos(4*f*x + 4*e) + 24*(f*x + e)*c*cos(2*f*x + 2*e) + 4*(f*x + e)*c +
 3*c*sin(4*f*x + 4*e) + 2*c*sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) + 4*(3*(f*x + e)*c*sin(2*f*x + 2*e) + 2*c*cos(2*f*x
 + 2*e))*sin(4*f*x + 4*e) - 8*c*sin(2*f*x + 2*e) + 2*(4*(f*x + e)*c*sin(4*f
*x + 4*e) + 24*(f*x + e)*c*sin(2*f*x + 2*e) + 16*(f*x + e)*c*sin(1/2*arctan
```

```
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 3*c*cos(4*f*x + 4*e) - 2*c*cos(2*f
*x + 2*e) - 3*c)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(
4*(f*x + e)*c*sin(4*f*x + 4*e) + 24*(f*x + e)*c*sin(2*f*x + 2*e) - 3*c*cos(
4*f*x + 4*e) - 2*c*cos(2*f*x + 2*e) - 3*c)*sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))))*sqrt(a)*sqrt(c)/((a^3*cos(4*f*x + 4*e)^2 + 36*a^3*cos
(2*f*x + 2*e)^2 + 16*a^3*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
))^2 + 16*a^3*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + a^3*
sin(4*f*x + 4*e)^2 + 12*a^3*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*a^3*sin(
2*f*x + 2*e)^2 + 16*a^3*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 16*a^3*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 12*a^
3*cos(2*f*x + 2*e) + a^3 + 2*(6*a^3*cos(2*f*x + 2*e) + a^3)*cos(4*f*x + 4*e
) + 8*(a^3*cos(4*f*x + 4*e) + 6*a^3*cos(2*f*x + 2*e) + 4*a^3*cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a^3)*cos(3/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) + 8*(a^3*cos(4*f*x + 4*e) + 6*a^3*cos(2*f*x + 2*e)
+ a^3)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*(a^3*sin(4*
f*x + 4*e) + 6*a^3*sin(2*f*x + 2*e) + 4*a^3*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
 + 8*(a^3*sin(4*f*x + 4*e) + 6*a^3*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e))))*f)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x))^(5/2),x)
[Out] int((c - c/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{\frac{3}{2}}}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(3/2)/(a+a*sec(f*x+e))**(5/2),x)
[Out] Integral((-c*(sec(e + f*x) - 1))**(3/2)/(a*(sec(e + f*x) + 1))**(5/2), x)
```

3.127 $\int \frac{\sqrt{c-c\sec(e+fx)}}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=140

$$\frac{c\tan(e+fx)\log(\cos(e+fx)+1)}{a^2 f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}} - \frac{c\tan(e+fx)}{af(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}} - \frac{c\tan(e+}{2f(a\sec(e+fx)+a)^{5/2}}$$

```
[Out] -1/2*c*tan(f*x+e)/f/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2)-c*tan(f*x
+e)/a/f/(a+a*sec(f*x+e))^(3/2)/(c-c*sec(f*x+e))^(1/2)+c*ln(1+cos(f*x+e))*ta
n(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {3907, 3911, 31}

$$\frac{c\tan(e+fx)\log(\cos(e+fx)+1)}{a^2 f\sqrt{a\sec(e+fx)+a}\,\sqrt{c-c\sec(e+fx)}} - \frac{c\tan(e+fx)}{af(a\sec(e+fx)+a)^{3/2}\sqrt{c-c\sec(e+fx)}} - \frac{c\tan(e+}{2f(a\sec(e+fx)+a)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - c*Sec[e + f*x]]/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] -(c*Tan[e + f*x])/(2*f*(a + a*Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]])
 - (c*Tan[e + f*x])/(a*f*(a + a*Sec[e + f*x])^(3/2)*Sqrt[c - c*Sec[e + f*x]
]) + (c*Log[1 + Cos[e + f*x]]*Tan[e + f*x])/(a^2*f*Sqrt[a + a*Sec[e + f*x]]
*Sqrt[c - c*Sec[e + f*x]])
```

Rule 31

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

Rule 3907

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(n_), x_Symbol] :> Simp[(-2*a*Cot[e + f*x]*(c + d*Csc[e + f*x])^
n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[1/c, Int[Sqrt[a + b*Cs
c[e + f*x]]*(c + d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && LtQ[n, -2^(-1)]
```

Rule 3911

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> -Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e
 + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((b + a*x)^(m - 1/2)*(d + c*x
)^(n - 1/2))/x^(m + n), x], x, Sin[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] && IntegerQ[m - 1/2] && EqQ
[m + n, 0]
```

Rubi steps

$$\int \frac{\sqrt{c-c\sec(e+fx)}}{(a+a\sec(e+fx))^{5/2}}\,dx = -\frac{c\tan(e+fx)}{2f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} + \frac{\int \frac{\sqrt{c-c\sec(e+fx)}}{(a+a\sec(e+fx))^{3/2}}\,dx}{a}$$

$$= -\frac{c\tan(e+fx)}{2f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} - \frac{c\tan(e+fx)}{af(a+a\sec(e+fx))^{3/2}\sqrt{c-c\,\mathrm{s}}}$$

$$= -\frac{c\tan(e+fx)}{2f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} - \frac{c\tan(e+fx)}{af(a+a\sec(e+fx))^{3/2}\sqrt{c-c\,\mathrm{s}}}$$

$$= -\frac{c\tan(e+fx)}{2f(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}} - \frac{c\tan(e+fx)}{af(a+a\sec(e+fx))^{3/2}\sqrt{c-c\,\mathrm{s}}}$$

Mathematica [C] time = 0.67, size = 151, normalized size = 1.08

$$\frac{i\cot\left(\frac{1}{2}(e+fx)\right)\sqrt{c-c\sec(e+fx)}\,\left(6i\log\left(1+e^{i(e+fx)}\right)+\left(fx+2i\log\left(1+e^{i(e+fx)}\right)\right)\cos(2(e+fx))+4\left(2i\,\mathrm{lo}\right.\right.}{2a^2f(\cos(e+fx)+1)^2\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c - c*Sec[e + f*x]]/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((I/2)*Cot[(e + f*x)/2]*(3*I + 3*f*x + Cos[2*(e + f*x)]*(f*x + (2*I)*Log[1
+ E^(I*(e + f*x))]) + 4*Cos[e + f*x]*(I + f*x + (2*I)*Log[1 + E^(I*(e + f*x
))]) + (6*I)*Log[1 + E^(I*(e + f*x))])*Sqrt[c - c*Sec[e + f*x]])/(a^2*f*(1
+ Cos[e + f*x])^2*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{a^3\sec\left(fx+e\right)^3+3\,a^3\sec\left(fx+e\right)^2+3\,a^3\sec\left(fx+e\right)+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^3*sec(f*x +
e)^3 + 3*a^3*sec(f*x + e)^2 + 3*a^3*sec(f*x + e) + a^3), x)
```

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((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
2*pi/x/2)>(-2*pi/x/2)2*sqrt(2)*(1/128*(4*sqrt(2)*a^3*c*sqrt(-a*c)*(c*tan(1/
2*(f*x+exp(1)))^2-c)^2*abs(c)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp
(1))))-16*sqrt(2)*a^3*c^2*sqrt(-a*c)*(c*tan(1/2*(f*x+exp(1)))^2-c)*abs(c)*s
ign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1)))))/a^6/c^4+1/2*c*sqrt(-a*c
```

)*sign(tan(1/2*(f*x+exp(1)))^3+tan(1/2*(f*x+exp(1))))*ln(abs(c*tan(1/2*(f*x
+exp(1)))^2+c))/sqrt(2)/a^3/abs(c))*sign(cos(f*x+exp(1)))/f

maple [A] time = 2.79, size = 152, normalized size = 1.09

$$\frac{\left(-1+\cos\left(fx+e\right)\right)^{2}\left(8\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)+7\left(\cos^{2}\left(fx+e\right)\right)+16\cos\left(fx+e\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-2}{8f\sin\left(fx+e\right)^{5}a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] 1/8/f*(-1+cos(f*x+e))^2*(8*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2+7*cos(f*x+e)^2
+16*cos(f*x+e)*ln(2/(1+cos(f*x+e)))-2*cos(f*x+e)+8*ln(2/(1+cos(f*x+e)))-5)*
cos(f*x+e)*(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)*(a*(1+cos(f*x+e))/cos(f*x+e
))^(1/2)/sin(f*x+e)^5/a^3
```

maxima [B] time = 1.40, size = 1165, normalized size = 8.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] -((f*x + e)*cos(4*f*x + 4*e)^2 + 16*(f*x + e)*cos(3*f*x + 3*e)^2 + 36*(f*x
+ e)*cos(2*f*x + 2*e)^2 + 16*(f*x + e)*cos(f*x + e)^2 + (f*x + e)*sin(4*f*x
 + 4*e)^2 + 16*(f*x + e)*sin(3*f*x + 3*e)^2 + 36*(f*x + e)*sin(2*f*x + 2*e)
^2 + 16*(f*x + e)*sin(f*x + e)^2 + f*x - 2*(2*(4*cos(3*f*x + 3*e) + 6*cos(2
*f*x + 2*e) + 4*cos(f*x + e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x + 4*e)^2 + 8
*(6*cos(2*f*x + 2*e) + 4*cos(f*x + e) + 1)*cos(3*f*x + 3*e) + 16*cos(3*f*x
+ 3*e)^2 + 12*(4*cos(f*x + e) + 1)*cos(2*f*x + 2*e) + 36*cos(2*f*x + 2*e)^2
 + 16*cos(f*x + e)^2 + 4*(2*sin(3*f*x + 3*e) + 3*sin(2*f*x + 2*e) + 2*sin(f
*x + e))*sin(4*f*x + 4*e) + sin(4*f*x + 4*e)^2 + 16*(3*sin(2*f*x + 2*e) + 2
*sin(f*x + e))*sin(3*f*x + 3*e) + 16*sin(3*f*x + 3*e)^2 + 36*sin(2*f*x + 2*
e)^2 + 48*sin(2*f*x + 2*e)*sin(f*x + e) + 16*sin(f*x + e)^2 + 8*cos(f*x + e
) + 1)*arctan2(sin(f*x + e), cos(f*x + e) + 1) + 2*(f*x + 4*(f*x + e)*cos(3
*f*x + 3*e) + 6*(f*x + e)*cos(2*f*x + 2*e) + 4*(f*x + e)*cos(f*x + e) + e -
 2*sin(3*f*x + 3*e) - 3*sin(2*f*x + 2*e) - 2*sin(f*x + e))*cos(4*f*x + 4*e)
 + 8*(f*x + 6*(f*x + e)*cos(2*f*x + 2*e) + 4*(f*x + e)*cos(f*x + e) + e)*co
s(3*f*x + 3*e) + 12*(f*x + 4*(f*x + e)*cos(f*x + e) + e)*cos(2*f*x + 2*e) +
 8*(f*x + e)*cos(f*x + e) + 2*(4*(f*x + e)*sin(3*f*x + 3*e) + 6*(f*x + e)*s
in(2*f*x + 2*e) + 4*(f*x + e)*sin(f*x + e) + 2*cos(3*f*x + 3*e) + 3*cos(2*f
*x + 2*e) + 2*cos(f*x + e))*sin(4*f*x + 4*e) + 4*(12*(f*x + e)*sin(2*f*x +
2*e) + 8*(f*x + e)*sin(f*x + e) - 1)*sin(3*f*x + 3*e) + 6*(8*(f*x + e)*sin(
f*x + e) - 1)*sin(2*f*x + 2*e) + e - 4*sin(f*x + e))*sqrt(a)*sqrt(c)/((a^3*
cos(4*f*x + 4*e)^2 + 16*a^3*cos(3*f*x + 3*e)^2 + 36*a^3*cos(2*f*x + 2*e)^2
+ 16*a^3*cos(f*x + e)^2 + a^3*sin(4*f*x + 4*e)^2 + 16*a^3*sin(3*f*x + 3*e)^
2 + 36*a^3*sin(2*f*x + 2*e)^2 + 48*a^3*sin(2*f*x + 2*e)*sin(f*x + e) + 16*a
^3*sin(f*x + e)^2 + 8*a^3*cos(f*x + e) + a^3 + 2*(4*a^3*cos(3*f*x + 3*e) +
6*a^3*cos(2*f*x + 2*e) + 4*a^3*cos(f*x + e) + a^3)*cos(4*f*x + 4*e) + 8*(6*
a^3*cos(2*f*x + 2*e) + 4*a^3*cos(f*x + e) + a^3)*cos(3*f*x + 3*e) + 12*(4*a
^3*cos(f*x + e) + a^3)*cos(2*f*x + 2*e) + 4*(2*a^3*sin(3*f*x + 3*e) + 3*a^3
*sin(2*f*x + 2*e) + 2*a^3*sin(f*x + e))*sin(4*f*x + 4*e) + 16*(3*a^3*sin(2*
f*x + 2*e) + 2*a^3*sin(f*x + e))*sin(3*f*x + 3*e))*f)
```

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

$$\int \frac{\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(5/2),x)
[Out] int((c - c/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**(1/2)/(a+a*sec(f*x+e))**(5/2),x)
[Out] Integral(sqrt(-c*(sec(e + f*x) - 1))/(a*(sec(e + f*x) + 1))**(5/2), x)
```

3.128 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}}\,dx$

Optimal. Leaf size=270

$$-\frac{3\tan(e+fx)}{4a^2f(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{4a^2f(\sec(e+fx)+1)^2\sqrt{a\sec(e+fx)+a}\sqrt{c-c}}$$

```
[Out] ln(cos(f*x+e))*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/
2)+1/8*ln(1-sec(f*x+e))*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*
x+e))^(1/2)+7/8*ln(1+sec(f*x+e))*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)/(c
-c*sec(f*x+e))^(1/2)-1/4*tan(f*x+e)/a^2/f/(1+sec(f*x+e))^2/(a+a*sec(f*x+e))
^(1/2)/(c-c*sec(f*x+e))^(1/2)-3/4*tan(f*x+e)/a^2/f/(1+sec(f*x+e))/(a+a*sec(
f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = {3912, 72}

$$-\frac{3\tan(e+fx)}{4a^2f(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{4a^2f(\sec(e+fx)+1)^2\sqrt{a\sec(e+fx)+a}\sqrt{c-c}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]]),x]
```

```
[Out] (Log[Cos[e + f*x]]*Tan[e + f*x])/(a^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c
*Sec[e + f*x]]) + (Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(8*a^2*f*Sqrt[a + a*
Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (7*Log[1 + Sec[e + f*x]]*Tan[e +
f*x])/(8*a^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - Tan[e +
 f*x]/(4*a^2*f*(1 + Sec[e + f*x])^2*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec
[e + f*x]]) - (3*Tan[e + f*x])/(4*a^2*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e
 + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{5/2}\sqrt{c-c\sec(e+fx)}}\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{x(a+ax)^3(c-cx)}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(-\frac{1}{8a^3c(-1+x)}+\frac{1}{a^3cx}-\frac{1}{2a^3c(1+x)^3}-\frac{}{4a^3c}\right.\right.}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(}}$$

$$= \frac{\log(\cos(e+fx))\tan(e+fx)}{a^2f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}+\frac{\log(1-\sec(}{8a^2f\sqrt{a+a\sec(e}}$$

Mathematica [C] time = 1.66, size = 195, normalized size = 0.72

$$\frac{\tan(e+fx)\left(3\log\left(1-e^{i(e+fx)}\right)+21\log\left(1+e^{i(e+fx)}\right)+\left(\log\left(1-e^{i(e+fx)}\right)+7\log\left(1+e^{i(e+fx)}\right)-4ifx\right)\cos(2(e}{8a^2f(\cos(e+fx)+1)^2\sqrt{a(\sec(e+fx)+}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*Sqrt[c - c*Sec[e + f*x]]),x]
```

```
[Out] ((8 - (12*I)*f*x + 3*Log[1 - E^(I*(e + f*x))] + 21*Log[1 + E^(I*(e + f*x))]
 + Cos[2*(e + f*x)]*((-4*I)*f*x + Log[1 - E^(I*(e + f*x))] + 7*Log[1 + E^(I
*(e + f*x))]) + 2*Cos[e + f*x]*(5 - (8*I)*f*x + 2*Log[1 - E^(I*(e + f*x))]
+ 14*Log[1 + E^(I*(e + f*x))]))*Tan[e + f*x])/(8*a^2*f*(1 + Cos[e + f*x])^2
*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{a^3c\sec\left(fx+e\right)^4+2\,a^3c\sec\left(fx+e\right)^3-2\,a^3c\sec\left(fx+e\right)-a^3c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] integral(-sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^3*c*sec(f*x
 + e)^4 + 2*a^3*c*sec(f*x + e)^3 - 2*a^3*c*sec(f*x + e) - a^3*c), 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(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[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
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)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant si
gn by intervals (correct if the argument is real):Check [abs(cos(f*t_nostep
+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
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*pi/t_nostep/2)Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep^3+t_nostep
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1)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]Sign error %%%{c,2%%%
}Sign error (%%%{c,0%%%}+%%%{c,2%%%})Evaluation time: 2.71Limit: Max order
reached or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.71, size = 223, normalized size = 0.83

$$\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\left(-1+\cos\left(fx+e\right)\right)^{3}\left(16\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)\left(\cos^{2}\left(fx+e\right)\right)-4\left(\cos^{2}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/16/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))^3*(16*ln(2/(1+co
s(f*x+e)))*cos(f*x+e)^2-4*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))+32*c
os(f*x+e)*ln(2/(1+cos(f*x+e)))-8*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)
+9*cos(f*x+e)^2+16*ln(2/(1+cos(f*x+e)))-4*ln(-(-1+cos(f*x+e))/sin(f*x+e))-2
*cos(f*x+e)-7)/(c*(-1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)^5/a^3
```

maxima [B] time = 1.14, size = 2206, normalized size = 8.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] -1/4*(4*(f*x + e)*cos(4*f*x + 4*e)^2 + 144*(f*x + e)*cos(2*f*x + 2*e)^2 + 6
4*(f*x + e)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 64*(f*
x + e)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*(f*x + e)
*sin(4*f*x + 4*e)^2 + 144*(f*x + e)*sin(2*f*x + 2*e)^2 + 64*(f*x + e)*sin(3
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 64*(f*x + e)*sin(1/2*ar
```

```
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*f*x - 7*(2*(6*cos(2*f*x +
2*e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x + 4*e)^2 + 36*cos(2*f*x + 2*e)^2 + 8
*(cos(4*f*x + 4*e) + 6*cos(2*f*x + 2*e) + 4*cos(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 16*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 8*(cos(4
*f*x + 4*e) + 6*cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) + 16*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2
 + sin(4*f*x + 4*e)^2 + 12*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*sin(2*f*x
 + 2*e)^2 + 8*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e) + 4*sin(1/2*arctan2(si
n(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + 16*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 +
 8*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + 16*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + 12*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) +
1) - (2*(6*cos(2*f*x + 2*e) + 1)*cos(4*f*x + 4*e) + cos(4*f*x + 4*e)^2 + 36
*cos(2*f*x + 2*e)^2 + 8*(cos(4*f*x + 4*e) + 6*cos(2*f*x + 2*e) + 4*cos(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e))) + 16*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e)))^2 + 8*(cos(4*f*x + 4*e) + 6*cos(2*f*x + 2*e) + 1)*cos(1/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*cos(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))^2 + sin(4*f*x + 4*e)^2 + 12*sin(4*f*x + 4*e)*sin(2*f*
x + 2*e) + 36*sin(2*f*x + 2*e)^2 + 8*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e)
 + 4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*sin(3/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e)))^2 + 8*(sin(4*f*x + 4*e) + 6*sin(2*f*x + 2*e))*sin(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*sin(1/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 12*cos(2*f*x + 2*e) + 1)*arctan2(sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) - 1) + 8*(f*x + 6*(f*x + e)*cos(2*f*x + 2*e) + e - 2*s
in(2*f*x + 2*e))*cos(4*f*x + 4*e) + 48*(f*x + e)*cos(2*f*x + 2*e) + 2*(16*f
*x + 16*(f*x + e)*cos(4*f*x + 4*e) + 96*(f*x + e)*cos(2*f*x + 2*e) + 64*(f*
x + e)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*e + 5*sin(
4*f*x + 4*e) - 2*sin(2*f*x + 2*e))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) + 2*(16*f*x + 16*(f*x + e)*cos(4*f*x + 4*e) + 96*(f*x + e)*cos
(2*f*x + 2*e) + 16*e + 5*sin(4*f*x + 4*e) - 2*sin(2*f*x + 2*e))*cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*(3*(f*x + e)*sin(2*f*x + 2*e
) + cos(2*f*x + 2*e))*sin(4*f*x + 4*e) + 2*(16*(f*x + e)*sin(4*f*x + 4*e) +
 96*(f*x + e)*sin(2*f*x + 2*e) + 64*(f*x + e)*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 5*cos(4*f*x + 4*e) + 2*cos(2*f*x + 2*e) - 5)*sin(
3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(16*(f*x + e)*sin(4*f*
x + 4*e) + 96*(f*x + e)*sin(2*f*x + 2*e) - 5*cos(4*f*x + 4*e) + 2*cos(2*f*x
 + 2*e) - 5)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 4*e - 1
6*sin(2*f*x + 2*e))/((a^2*cos(4*f*x + 4*e)^2 + 36*a^2*cos(2*f*x + 2*e)^2 +
16*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*a^2*cos(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + a^2*sin(4*f*x + 4*e)^2
 + 12*a^2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 36*a^2*sin(2*f*x + 2*e)^2 + 1
6*a^2*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*a^2*sin(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 12*a^2*cos(2*f*x + 2*e)
 + a^2 + 2*(6*a^2*cos(2*f*x + 2*e) + a^2)*cos(4*f*x + 4*e) + 8*(a^2*cos(4*f
*x + 4*e) + 6*a^2*cos(2*f*x + 2*e) + 4*a^2*cos(1/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + a^2)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e))) + 8*(a^2*cos(4*f*x + 4*e) + 6*a^2*cos(2*f*x + 2*e) + a^2)*cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*(a^2*sin(4*f*x + 4*e) + 6*a^2
*sin(2*f*x + 2*e) + 4*a^2*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*(a^2*sin(4*f*
x + 4*e) + 6*a^2*sin(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))))*sqrt(a)*sqrt(c)*f)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\sqrt{c-\frac{c}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^(1/2)),x)
[Out] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^(1/2)), x)
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}\sqrt{-c\left(\sec\left(e+fx\right)-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(1/2),x)
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(5/2)*sqrt(-c*(sec(e + f*x) - 1))), x)
```

3.129 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=345

$$-\frac{\tan(e+fx)}{8a^2cf(1-\sec(e+fx))\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{2a^2cf(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c}}$$

```
[Out] ln(cos(f*x+e))*tan(f*x+e)/a^2/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(
1/2)+5/16*ln(1-sec(f*x+e))*tan(f*x+e)/a^2/c/f/(a+a*sec(f*x+e))^(1/2)/(c-c*s
ec(f*x+e))^(1/2)+11/16*ln(1+sec(f*x+e))*tan(f*x+e)/a^2/c/f/(a+a*sec(f*x+e))
^(1/2)/(c-c*sec(f*x+e))^(1/2)-1/8*tan(f*x+e)/a^2/c/f/(1-sec(f*x+e))/(a+a*se
c(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-1/8*tan(f*x+e)/a^2/c/f/(1+sec(f*x+e)
)^2/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-1/2*tan(f*x+e)/a^2/c/f/(1
+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$, Rules used = {3912, 88}

$$-\frac{\tan(e+fx)}{8a^2cf(1-\sec(e+fx))\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}-\frac{\tan(e+fx)}{2a^2cf(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(3/2)),x]
```

```
[Out] (Log[Cos[e + f*x]]*Tan[e + f*x])/(a^2*c*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c -
 c*Sec[e + f*x]]) + (5*Log[1 - Sec[e + f*x]]*Tan[e + f*x])/(16*a^2*c*f*Sqrt
[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) + (11*Log[1 + Sec[e + f*x]]*
Tan[e + f*x])/(16*a^2*c*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]
) - Tan[e + f*x]/(8*a^2*c*f*(1 - Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]*Sqr
t[c - c*Sec[e + f*x]]) - Tan[e + f*x]/(8*a^2*c*f*(1 + Sec[e + f*x])^2*Sqrt[
a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]) - Tan[e + f*x]/(2*a^2*c*f*(1
+ Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]])
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^{3/2}}\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{x(a+ax)^3(c-cx)^2}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}$$
$$= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \left(\frac{1}{8a^3c^2(-1+x)^2} - \frac{5}{16a^3c^2(-1+x)} + \frac{1}{a^3c^2x} \right.\right.}{f\sqrt{a+a\sec(e+fx)}}$$
$$= \frac{\log(\cos(e+fx))\tan(e+fx)}{a^2cf\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}} + \frac{5\log(1-}{16a^2cf\sqrt{a+a\,\text{s}}}$$

Mathematica [C] time = 2.40, size = 275, normalized size = 0.80

$$\frac{\tan(e+fx)\left(-10\log\left(1-e^{i(e+fx)}\right) - 22\log\left(1+e^{i(e+fx)}\right) - 8ifx\cos(3(e+fx)) + 5\log\left(1-e^{i(e+fx)}\right)\cos(3(e+fx)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(3/2)),x]
```

```
[Out] ((-14 + (16*I)*f*x - (8*I)*f*x*Cos[3*(e + f*x)] - 10*Log[1 - E^(I*(e + f*x)
)] + 5*Cos[3*(e + f*x)]*Log[1 - E^(I*(e + f*x))] + Cos[e + f*x]*(-12 + (8*I
)*f*x - 5*Log[1 - E^(I*(e + f*x))] - 11*Log[1 + E^(I*(e + f*x))]) - 22*Log[
1 + E^(I*(e + f*x))] + 11*Cos[3*(e + f*x)]*Log[1 + E^(I*(e + f*x))] + 2*Cos
[2*(e + f*x)]*(5 - (8*I)*f*x + 5*Log[1 - E^(I*(e + f*x))] + 11*Log[1 + E^(I
*(e + f*x))]))*Tan[e + f*x])/(32*a^2*c*f*(-1 + Cos[e + f*x])*(1 + Cos[e + f
*x])^2*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])
```

fricas [F] time = 0.80, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\,\sqrt{-c\sec\left(fx+e\right)+c}}{a^3c^2\sec\left(fx+e\right)^5 + a^3c^2\sec\left(fx+e\right)^4 - 2\,a^3c^2\sec\left(fx+e\right)^3 - 2\,a^3c^2\sec\left(fx+e\right)^2 + a^3c^2\sec\left(fx+e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="fri
cas")
```

```
[Out] integral(sqrt(a*sec(f*x + e) + a)*sqrt(-c*sec(f*x + e) + c)/(a^3*c^2*sec(f*
x + e)^5 + a^3*c^2*sec(f*x + e)^4 - 2*a^3*c^2*sec(f*x + e)^3 - 2*a^3*c^2*se
c(f*x + e)^2 + a^3*c^2*sec(f*x + e) + a^3*c^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(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="gia
c")
```

```
[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
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i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sig
n: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep
/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nost
ep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to ch
eck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs o
r sign assumes constant sign by intervals (correct if the argument is real)
:Check [abs(t_nostep^3+t_nostep)]Discontinuities at zeroes of t_nostep^3+t_
nostep were not checkedUnable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nos
tep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Warning, in
tegration of abs or sign assumes constant sign by intervals (correct if the
 argument is real):Check [abs(t_nostep^3+t_nostep)]Discontinuities at zeroe
s of t_nostep^3+t_nostep were not checkedDiscontinuities at zeroes of cos(f
*t_nostep+exp(1)) were not checkedUnable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/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 t
o check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi
/x/2)Warning, integration of abs or sign assumes constant sign by intervals
 (correct if the argument is real):Check [abs(t_nostep),abs(t_nostep^2-1)]W
arning, integration of abs or sign assumes constant sign by intervals (corr
ect if the argument is real):Check [abs(t_nostep)]Sign error (%%%{c,0%%%}+%
%%{c,2%%%})Sign error %%%{-c,2%%%}Evaluation time: 3.17Limit: Max order rea
ched or unable to make series expansion Error: Bad Argument Value
```

maple [A] time = 2.60, size = 284, normalized size = 0.82

$$-\frac{\left(20\ln\left(-\frac{-1+\cos(fx+e)}{\sin(fx+e)}\right)\left(\cos^3\left(fx+e\right)\right)-32\left(\cos^3\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos(fx+e)}\right)+20\left(\cos^2\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos(\cdot}{\sin(fx\cdot}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/32/f*(20*ln(-(-1+cos(f*x+e))/sin(f*x+e))*cos(f*x+e)^3-32*cos(f*x+e)^3*ln
(2/(1+cos(f*x+e)))+20*cos(f*x+e)^2*ln(-(-1+cos(f*x+e))/sin(f*x+e))-32*ln(2/
```

```
(1+cos(f*x+e)))*cos(f*x+e)^2-13*cos(f*x+e)^3-20*ln(-(-1+cos(f*x+e))/sin(f*x
+e))*cos(f*x+e)+32*cos(f*x+e)*ln(2/(1+cos(f*x+e)))+7*cos(f*x+e)^2-20*ln(-(-
1+cos(f*x+e))/sin(f*x+e))+32*ln(2/(1+cos(f*x+e)))+cos(f*x+e)-11)*(a*(1+cos(
f*x+e))/cos(f*x+e))^(1/2)*cos(f*x+e)^2*(c*(-1+cos(f*x+e))/cos(f*x+e))^(3/2)
/c^3/sin(f*x+e)^5/a^3
```

maxima [B] time = 4.63, size = 4272, normalized size = 12.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(3/2),x, algorithm="max
ima")
```

```
[Out] -1/8*(8*(f*x + e)*cos(6*f*x + 6*e)^2 + 8*(f*x + e)*cos(4*f*x + 4*e)^2 + 8*(
f*x + e)*cos(2*f*x + 2*e)^2 + 32*(f*x + e)*cos(5/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e)))^2 + 128*(f*x + e)*cos(3/2*arctan2(sin(2*f*x + 2*e), co
s(2*f*x + 2*e)))^2 + 32*(f*x + e)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e)))^2 + 8*(f*x + e)*sin(6*f*x + 6*e)^2 + 8*(f*x + e)*sin(4*f*x + 4*
e)^2 + 8*(f*x + e)*sin(2*f*x + 2*e)^2 + 32*(f*x + e)*sin(5/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e)))^2 + 128*(f*x + e)*sin(3/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e)))^2 + 32*(f*x + e)*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))^2 + 8*f*x + 11*(2*(cos(4*f*x + 4*e) + cos(2*f*x + 2*e
) - 1)*cos(6*f*x + 6*e) - cos(6*f*x + 6*e)^2 - 2*(cos(2*f*x + 2*e) - 1)*cos
(4*f*x + 4*e) - cos(4*f*x + 4*e)^2 - cos(2*f*x + 2*e)^2 - 4*(cos(6*f*x + 6*
e) - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) - 4*cos(3/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) + 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e))) + 1)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*cos(5/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 8*(cos(6*f*x + 6*e) - cos(
4*f*x + 4*e) - cos(2*f*x + 2*e) + 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 1
6*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 4*(cos(6*f*x + 6
*e) - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
2*e)))^2 + 2*(sin(4*f*x + 4*e) + sin(2*f*x + 2*e))*sin(6*f*x + 6*e) - sin(6
*f*x + 6*e)^2 - sin(4*f*x + 4*e)^2 - 2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) -
sin(2*f*x + 2*e)^2 - 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2
*e) - 4*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*sin(1/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e))) - 4*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e
)))^2 + 8*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e) + 2*sin(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x
+ 2*e), cos(2*f*x + 2*e))) - 16*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e)))^2 - 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e))*si
n(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*sin(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*cos(2*f*x + 2*e) - 1)*arctan2(sin(1/
2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e))) + 1) + 5*(2*(cos(4*f*x + 4*e) + cos(2*f*x + 2*e)
- 1)*cos(6*f*x + 6*e) - cos(6*f*x + 6*e)^2 - 2*(cos(2*f*x + 2*e) - 1)*cos(4
*f*x + 4*e) - cos(4*f*x + 4*e)^2 - cos(2*f*x + 2*e)^2 - 4*(cos(6*f*x + 6*e)
 - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) - 4*cos(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e))) + 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
)) + 1)*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*cos(5/2*ar
ctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 8*(cos(6*f*x + 6*e) - cos(4*
f*x + 4*e) - cos(2*f*x + 2*e) + 2*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + 1)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 16*
cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 4*(cos(6*f*x + 6*e
) - cos(4*f*x + 4*e) - cos(2*f*x + 2*e) + 1)*cos(1/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) - 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))^2 + 2*(sin(4*f*x + 4*e) + sin(2*f*x + 2*e))*sin(6*f*x + 6*e) - sin(6*f
```

```
*x + 6*e)^2 - sin(4*f*x + 4*e)^2 - 2*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) - si
n(2*f*x + 2*e)^2 - 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e
) - 4*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e))) - 4*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))
)^2 + 8*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e) + 2*sin(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x +
2*e), cos(2*f*x + 2*e))) - 16*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))^2 - 4*(sin(6*f*x + 6*e) - sin(4*f*x + 4*e) - sin(2*f*x + 2*e))*sin(
1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*sin(1/2*arctan2(sin(2*
f*x + 2*e), cos(2*f*x + 2*e)))^2 + 2*cos(2*f*x + 2*e) - 1)*arctan2(sin(1/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))), cos(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e))) - 1) + 4*(4*f*x - 4*(f*x + e)*cos(4*f*x + 4*e) - 4*
(f*x + e)*cos(2*f*x + 2*e) + 4*e + 3*sin(4*f*x + 4*e) + 3*sin(2*f*x + 2*e))
*cos(6*f*x + 6*e) - 16*(f*x - (f*x + e)*cos(2*f*x + 2*e) + e)*cos(4*f*x + 4
*e) - 16*(f*x + e)*cos(2*f*x + 2*e) + 2*(16*f*x + 16*(f*x + e)*cos(6*f*x +
6*e) - 16*(f*x + e)*cos(4*f*x + 4*e) - 16*(f*x + e)*cos(2*f*x + 2*e) - 64*(
f*x + e)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 32*(f*x + e
)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*e + 5*sin(6*f*x
 + 6*e) + 7*sin(4*f*x + 4*e) + 7*sin(2*f*x + 2*e) + 8*sin(3/2*arctan2(sin(2
*f*x + 2*e), cos(2*f*x + 2*e))))*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) - 4*(16*f*x + 16*(f*x + e)*cos(6*f*x + 6*e) - 16*(f*x + e)*cos(4
*f*x + 4*e) - 16*(f*x + e)*cos(2*f*x + 2*e) + 32*(f*x + e)*cos(1/2*arctan2(
sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 16*e + 7*sin(6*f*x + 6*e) + 5*sin(4*
f*x + 4*e) + 5*sin(2*f*x + 2*e) + 4*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2
*f*x + 2*e))))*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(16
*f*x + 16*(f*x + e)*cos(6*f*x + 6*e) - 16*(f*x + e)*cos(4*f*x + 4*e) - 16*(
f*x + e)*cos(2*f*x + 2*e) + 16*e + 5*sin(6*f*x + 6*e) + 7*sin(4*f*x + 4*e)
+ 7*sin(2*f*x + 2*e))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
- 4*(4*(f*x + e)*sin(4*f*x + 4*e) + 4*(f*x + e)*sin(2*f*x + 2*e) + 3*cos(4*
f*x + 4*e) + 3*cos(2*f*x + 2*e))*sin(6*f*x + 6*e) + 4*(4*(f*x + e)*sin(2*f*
x + 2*e) + 3)*sin(4*f*x + 4*e) + 2*(16*(f*x + e)*sin(6*f*x + 6*e) - 16*(f*x
 + e)*sin(4*f*x + 4*e) - 16*(f*x + e)*sin(2*f*x + 2*e) - 64*(f*x + e)*sin(3
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 32*(f*x + e)*sin(1/2*arct
an2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 5*cos(6*f*x + 6*e) - 7*cos(4*f*x
 + 4*e) - 7*cos(2*f*x + 2*e) - 8*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) - 5)*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 4*(1
6*(f*x + e)*sin(6*f*x + 6*e) - 16*(f*x + e)*sin(4*f*x + 4*e) - 16*(f*x + e)
*sin(2*f*x + 2*e) + 32*(f*x + e)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*
x + 2*e))) - 7*cos(6*f*x + 6*e) - 5*cos(4*f*x + 4*e) - 5*cos(2*f*x + 2*e) -
 4*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 7)*sin(3/2*arctan
2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*(16*(f*x + e)*sin(6*f*x + 6*e) -
 16*(f*x + e)*sin(4*f*x + 4*e) - 16*(f*x + e)*sin(2*f*x + 2*e) - 5*cos(6*f*
x + 6*e) - 7*cos(4*f*x + 4*e) - 7*cos(2*f*x + 2*e) - 5)*sin(1/2*arctan2(sin
(2*f*x + 2*e), cos(2*f*x + 2*e))) + 8*e + 12*sin(2*f*x + 2*e))/((a^2*c*cos(
6*f*x + 6*e)^2 + a^2*c*cos(4*f*x + 4*e)^2 + a^2*c*cos(2*f*x + 2*e)^2 + 4*a^
2*c*cos(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 16*a^2*c*cos(3
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*a^2*c*cos(1/2*arctan2
(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + a^2*c*sin(6*f*x + 6*e)^2 + a^2*c*
sin(4*f*x + 4*e)^2 + 2*a^2*c*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + a^2*c*sin(
2*f*x + 2*e)^2 + 4*a^2*c*sin(5/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
))^2 + 16*a^2*c*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 + 4*
a^2*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))^2 - 2*a^2*c*cos(
2*f*x + 2*e) + a^2*c - 2*(a^2*c*cos(4*f*x + 4*e) + a^2*c*cos(2*f*x + 2*e) -
 a^2*c)*cos(6*f*x + 6*e) + 2*(a^2*c*cos(2*f*x + 2*e) - a^2*c)*cos(4*f*x + 4
*e) + 4*(a^2*c*cos(6*f*x + 6*e) - a^2*c*cos(4*f*x + 4*e) - a^2*c*cos(2*f*x
+ 2*e) - 4*a^2*c*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + 2*a
^2*c*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + a^2*c)*cos(5/2*
arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 8*(a^2*c*cos(6*f*x + 6*e) -
```

```
a^2*c*cos(4*f*x + 4*e) - a^2*c*cos(2*f*x + 2*e) + 2*a^2*c*cos(1/2*arctan2(s
in(2*f*x + 2*e), cos(2*f*x + 2*e))) + a^2*c)*cos(3/2*arctan2(sin(2*f*x + 2*
e), cos(2*f*x + 2*e))) + 4*(a^2*c*cos(6*f*x + 6*e) - a^2*c*cos(4*f*x + 4*e)
 - a^2*c*cos(2*f*x + 2*e) + a^2*c)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*
f*x + 2*e))) - 2*(a^2*c*sin(4*f*x + 4*e) + a^2*c*sin(2*f*x + 2*e))*sin(6*f*
x + 6*e) + 4*(a^2*c*sin(6*f*x + 6*e) - a^2*c*sin(4*f*x + 4*e) - a^2*c*sin(2
*f*x + 2*e) - 4*a^2*c*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
+ 2*a^2*c*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(5/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) - 8*(a^2*c*sin(6*f*x + 6*e) - a^2
*c*sin(4*f*x + 4*e) - a^2*c*sin(2*f*x + 2*e) + 2*a^2*c*sin(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))))*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e))) + 4*(a^2*c*sin(6*f*x + 6*e) - a^2*c*sin(4*f*x + 4*e) - a^2*c*si
n(2*f*x + 2*e))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*sqrt(
a)*sqrt(c)*f)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^(3/2)),x)
[Out] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/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/(a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(3/2),x)
[Out] Timed out
```

3.130 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=151

$$-\frac{\cot^3(e+fx)}{4a^2c^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\cot(e+fx)}{2a^2c^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\tan(e}{a^2c^2f\sqrt{a\sec(}$$

```
[Out] 1/2*cot(f*x+e)/a^2/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)-1/4*
cot(f*x+e)^3/a^2/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)+ln(sin
(f*x+e))*tan(f*x+e)/a^2/c^2/f/(a+a*sec(f*x+e))^(1/2)/(c-c*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {3905, 3473, 3475}

$$-\frac{\cot^3(e+fx)}{4a^2c^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\cot(e+fx)}{2a^2c^2f\sqrt{a\sec(e+fx)+a}\sqrt{c-c\sec(e+fx)}}+\frac{\tan(e}{a^2c^2f\sqrt{a\sec(}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(5/2)),x]
```

```
[Out] Cot[e + f*x]/(2*a^2*c^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e + f*x]]
) - Cot[e + f*x]^3/(4*a^2*c^2*f*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c - c*Sec[e +
 f*x]]) + (Log[Sin[e + f*x]]*Tan[e + f*x])/(a^2*c^2*f*Sqrt[a + a*Sec[e + f*
x]]*Sqrt[c - c*Sec[e + f*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 3475

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

Rule 3905

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(m_), x_Symbol] :> Dist[((-(a*c))^(m + 1/2)*Cot[e + f*x])/(Sqrt
[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[Cot[e + f*x]^(2*m), x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^
2, 0] && IntegerQ[m + 1/2]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^{5/2}}\,dx &= \frac{\tan(e+fx)\int \cot^5(e+fx)\,dx}{a^2c^2\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= -\frac{\cot^3(e+fx)}{4a^2c^2f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}-\frac{\text{ta}}{a^2c^2\sqrt{a+}}\\ &= \frac{\cot(e+fx)}{2a^2c^2f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}-\frac{}{4a^2c^2f\sqrt{a}}\\ &= \frac{\cot(e+fx)}{2a^2c^2f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}-\frac{}{4a^2c^2f\sqrt{a}}\end{aligned}$$

Mathematica [C] time = 2.19, size = 149, normalized size = 0.99

$$\frac{\csc^3(e+fx)\sec(e+fx)\left(3\log\left(1-e^{2i(e+fx)}\right)+\left(-4\log\left(1-e^{2i(e+fx)}\right)+4ifx-4\right)\cos(2(e+fx))+\left(\log\left(1-e^{2i(e+\right.\right.}{8a^2c^2f\sqrt{a(\sec(e+fx)+1)}\sqrt{c-c\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^(5/2)),x]
```

```
[Out] (Csc[e + f*x]^3*(2 - (3*I)*f*x + Cos[2*(e + f*x)]*(-4 + (4*I)*f*x - 4*Log[1
 - E^((2*I)*(e + f*x))]) + 3*Log[1 - E^((2*I)*(e + f*x))] + Cos[4*(e + f*x)
]*((-I)*f*x + Log[1 - E^((2*I)*(e + f*x))]))*Sec[e + f*x])/(8*a^2*c^2*f*Sqr
t[a*(1 + Sec[e + f*x])]*Sqrt[c - c*Sec[e + f*x]])
```

fricas [A] time = 1.02, size = 564, normalized size = 3.74

$$\left[-\frac{162\left(\cos\left(fx+e\right)^4-2\cos\left(fx+e\right)^2+1\right)\sqrt{-ac}\log\left(-\frac{8\left(\left(256\cos\left(fx+e\right)^5-512\cos\left(fx+e\right)^3+175\cos\left(fx+e\right)\right)\sqrt{-ac}\sqrt{\frac{a\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}}{\left(\cos\left(fx+e\right.\right.}\right.}{324\left(a\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="fri
cas")
```

```
[Out] [-1/324*(162*(cos(f*x + e)^4 - 2*cos(f*x + e)^2 + 1)*sqrt(-a*c)*log(-8*((25
6*cos(f*x + e)^5 - 512*cos(f*x + e)^3 + 175*cos(f*x + e))*sqrt(-a*c)*sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e)) -
 (256*a*c*cos(f*x + e)^4 - 512*a*c*cos(f*x + e)^2 + 337*a*c)*sin(f*x + e))/
((cos(f*x + e)^2 - 1)*sin(f*x + e)))*sin(f*x + e) + (832*cos(f*x + e)^5 - 1
988*cos(f*x + e)^3 + 1075*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*sqrt((c*cos(f*x + e) - c)/cos(f*x + e)))/((a^3*c^3*f*cos(f*x + e)^4 -
2*a^3*c^3*f*cos(f*x + e)^2 + a^3*c^3*f)*sin(f*x + e)), -1/324*(324*(cos(f*x
 + e)^4 - 2*cos(f*x + e)^2 + 1)*sqrt(a*c)*arctan((16*cos(f*x + e)^3 - 7*cos
(f*x + e))*sqrt(a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*
x + e) - c)/cos(f*x + e))/((16*a*c*cos(f*x + e)^2 - 25*a*c)*sin(f*x + e)))*
sin(f*x + e) + (832*cos(f*x + e)^5 - 1988*cos(f*x + e)^3 + 1075*cos(f*x + e
))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) - c)/cos(f*
x + e)))/((a^3*c^3*f*cos(f*x + e)^4 - 2*a^3*c^3*f*cos(f*x + e)^2 + a^3*c^3*
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(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="gia
c")
```

```
[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
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e to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2
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```
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)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant si
gn by intervals (correct if the argument is real):Check [abs(cos(f*t_nostep
+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
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real):Check [abs(t_nostep^3+t_nostep)]Discontinuities at zeroes of t_nostep
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or sign assumes constant sign by intervals (correct if the argument is real
):Check [abs(t_nostep),abs(t_nostep^2-1)]Warning, integration of abs or sig
n assumes constant sign by intervals (correct if the argument is real):Chec
k [abs(t_nostep)]Evaluation time: 3.11index.cc index_m i_lex_is_greater Err
or: Bad Argument Value
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maple [A] time = 2.48, size = 237, normalized size = 1.57

$$-\frac{\left(-1+\cos\left(fx+e\right)\right)^{3}\left(32\left(\cos^{4}\left(fx+e\right)\right)\ln\left(-\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right)-32\left(\cos^{4}\left(fx+e\right)\right)\ln\left(\frac{2}{1+\cos\left(fx+e\right)}\right)-13\left(\cos^{4}\left(fx\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/32/f*(-1+cos(f*x+e))^3*(32*cos(f*x+e)^4*ln(-(-1+cos(f*x+e))/sin(f*x+e))-
32*cos(f*x+e)^4*ln(2/(1+cos(f*x+e)))-13*cos(f*x+e)^4-64*cos(f*x+e)^2*ln(-(-
1+cos(f*x+e))/sin(f*x+e))+64*ln(2/(1+cos(f*x+e)))*cos(f*x+e)^2-6*cos(f*x+e)
^2+32*ln(-(-1+cos(f*x+e))/sin(f*x+e))-32*ln(2/(1+cos(f*x+e)))+11)*(a*(1+cos
(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)^5/cos(f*x+e)^2/(c*(-1+cos(f*x+e))/cos
(f*x+e))^(5/2)/a^3
```

maxima [B] time = 1.34, size = 1386, normalized size = 9.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c-c*sec(f*x+e))^(5/2),x, algorithm="max
ima")
```

```
[Out] -((f*x + e)*cos(8*f*x + 8*e)^2 + 16*(f*x + e)*cos(6*f*x + 6*e)^2 + 36*(f*x
+ e)*cos(4*f*x + 4*e)^2 + 16*(f*x + e)*cos(2*f*x + 2*e)^2 + (f*x + e)*sin(8
*f*x + 8*e)^2 + 16*(f*x + e)*sin(6*f*x + 6*e)^2 + 36*(f*x + e)*sin(4*f*x +
4*e)^2 + 16*(f*x + e)*sin(2*f*x + 2*e)^2 + f*x + (2*(4*cos(6*f*x + 6*e) - 6
*cos(4*f*x + 4*e) + 4*cos(2*f*x + 2*e) - 1)*cos(8*f*x + 8*e) - cos(8*f*x +
8*e)^2 + 8*(6*cos(4*f*x + 4*e) - 4*cos(2*f*x + 2*e) + 1)*cos(6*f*x + 6*e) -
 16*cos(6*f*x + 6*e)^2 + 12*(4*cos(2*f*x + 2*e) - 1)*cos(4*f*x + 4*e) - 36*
cos(4*f*x + 4*e)^2 - 16*cos(2*f*x + 2*e)^2 + 4*(2*sin(6*f*x + 6*e) - 3*sin(
4*f*x + 4*e) + 2*sin(2*f*x + 2*e))*sin(8*f*x + 8*e) - sin(8*f*x + 8*e)^2 +
16*(3*sin(4*f*x + 4*e) - 2*sin(2*f*x + 2*e))*sin(6*f*x + 6*e) - 16*sin(6*f*
x + 6*e)^2 - 36*sin(4*f*x + 4*e)^2 + 48*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) -
 16*sin(2*f*x + 2*e)^2 + 8*cos(2*f*x + 2*e) - 1)*arctan2(sin(2*f*x + 2*e),
cos(2*f*x + 2*e) - 1) + 2*(f*x - 4*(f*x + e)*cos(6*f*x + 6*e) + 6*(f*x + e)
*cos(4*f*x + 4*e) - 4*(f*x + e)*cos(2*f*x + 2*e) + e + 2*sin(6*f*x + 6*e) -
 2*sin(4*f*x + 4*e) + 2*sin(2*f*x + 2*e))*cos(8*f*x + 8*e) - 8*(f*x + 6*(f*
x + e)*cos(4*f*x + 4*e) - 4*(f*x + e)*cos(2*f*x + 2*e) + e + sin(4*f*x + 4*
e))*cos(6*f*x + 6*e) + 4*(3*f*x - 12*(f*x + e)*cos(2*f*x + 2*e) + 3*e + 2*s
in(2*f*x + 2*e))*cos(4*f*x + 4*e) - 8*(f*x + e)*cos(2*f*x + 2*e) - 4*(2*(f*
x + e)*sin(6*f*x + 6*e) - 3*(f*x + e)*sin(4*f*x + 4*e) + 2*(f*x + e)*sin(2*
f*x + 2*e) + cos(6*f*x + 6*e) - cos(4*f*x + 4*e) + cos(2*f*x + 2*e))*sin(8*
f*x + 8*e) - 4*(12*(f*x + e)*sin(4*f*x + 4*e) - 8*(f*x + e)*sin(2*f*x + 2*e
) - 2*cos(4*f*x + 4*e) - 1)*sin(6*f*x + 6*e) - 4*(12*(f*x + e)*sin(2*f*x +
2*e) + 2*cos(2*f*x + 2*e) + 1)*sin(4*f*x + 4*e) + e + 4*sin(2*f*x + 2*e))*s
qrt(a)*sqrt(c)/((a^3*c^3*cos(8*f*x + 8*e)^2 + 16*a^3*c^3*cos(6*f*x + 6*e)^2
 + 36*a^3*c^3*cos(4*f*x + 4*e)^2 + 16*a^3*c^3*cos(2*f*x + 2*e)^2 + a^3*c^3*
sin(8*f*x + 8*e)^2 + 16*a^3*c^3*sin(6*f*x + 6*e)^2 + 36*a^3*c^3*sin(4*f*x +
 4*e)^2 - 48*a^3*c^3*sin(4*f*x + 4*e)*sin(2*f*x + 2*e) + 16*a^3*c^3*sin(2*f
*x + 2*e)^2 - 8*a^3*c^3*cos(2*f*x + 2*e) + a^3*c^3 - 2*(4*a^3*c^3*cos(6*f*x
 + 6*e) - 6*a^3*c^3*cos(4*f*x + 4*e) + 4*a^3*c^3*cos(2*f*x + 2*e) - a^3*c^3
)*cos(8*f*x + 8*e) - 8*(6*a^3*c^3*cos(4*f*x + 4*e) - 4*a^3*c^3*cos(2*f*x +
2*e) + a^3*c^3)*cos(6*f*x + 6*e) - 12*(4*a^3*c^3*cos(2*f*x + 2*e) - a^3*c^3
)*cos(4*f*x + 4*e) - 4*(2*a^3*c^3*sin(6*f*x + 6*e) - 3*a^3*c^3*sin(4*f*x +
```

```
4*e) + 2*a^3*c^3*sin(2*f*x + 2*e))*sin(8*f*x + 8*e) - 16*(3*a^3*c^3*sin(4*f
*x + 4*e) - 2*a^3*c^3*sin(2*f*x + 2*e))*sin(6*f*x + 6*e))*f)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^(5/2)),x)
[Out] int(1/((a + a/cos(e + f*x))^(5/2)*(c - c/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/(a+a*sec(f*x+e))**(5/2)/(c-c*sec(f*x+e))**(5/2),x)
[Out] Timed out
```

3.131 $\int (1+\sec(e+fx))^m(c-c\sec(e+fx))^n\,dx$

Optimal. Leaf size=92

$$\frac{2^{m+\frac{1}{2}}\tan(e+fx)(c-c\sec(e+fx))^n F_1\left(n+\frac{1}{2};\frac{1}{2}-m,1;n+\frac{3}{2};\frac{1}{2}(1-\sec(e+fx)),1-\sec(e+fx)\right)}{f(2n+1)\sqrt{\sec(e+fx)+1}}$$

```
[Out] 2^(1/2+m)*AppellF1(1/2+n,1,1/2-m,3/2+n,1-sec(f*x+e),1/2-1/2*sec(f*x+e))*(c-
c*sec(f*x+e))^n*tan(f*x+e)/f/(1+2*n)/(1+sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = {3912, 136}

$$\frac{2^{m+\frac{1}{2}}\tan(e+fx)(c-c\sec(e+fx))^n F_1\left(n+\frac{1}{2};\frac{1}{2}-m,1;n+\frac{3}{2};\frac{1}{2}(1-\sec(e+fx)),1-\sec(e+fx)\right)}{f(2n+1)\sqrt{\sec(e+fx)+1}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + Sec[e + f*x])^m*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (2^(1/2 + m)*AppellF1[1/2 + n, 1/2 - m, 1, 3/2 + n, (1 - Sec[e + f*x])/2, 1
 - Sec[e + f*x]]*(c - c*Sec[e + f*x])^n*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[1 +
 Sec[e + f*x]])
```

Rule 136

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Simp[((b*e - a*f)^p*(a + b*x)^(m + 1)*AppellF1[m + 1, -
n, -p, m + 2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/
(b^(p + 1)*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] && GtQ[b/(b*c - a*d),
 0] &&  !(GtQ[d/(d*a - c*b), 0] && SimplerQ[c + d*x, a + b*x])
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int (1+\sec(e+fx))^m(c-c\sec(e+fx))^n\,dx &= -\frac{(c\tan(e+fx))\,\text{Subst}\left(\int \frac{(1+x)^{-\frac{1}{2}+m}(c-cx)^{-\frac{1}{2}+n}}{x}\,dx,x,\sec(e+fx)\right)}{f\sqrt{1+\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}\\ &= \frac{2^{\frac{1}{2}+m}F_1\left(\frac{1}{2}+n;\frac{1}{2}-m,1;\frac{3}{2}+n;\frac{1}{2}(1-\sec(e+fx)),1-\sec(e+fx)\right)}{f(1+2n)\sqrt{1+\sec(e+fx)}}\end{aligned}$$

Mathematica [F] time = 1.10, size = 0, normalized size = 0.00

$$\int (1+\sec(e+fx))^m(c-c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 + Sec[e + f*x])^m*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[(1 + Sec[e + f*x])^m*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(-c\sec\left(fx+e\right)+c\right)^{n}\left(\sec\left(fx+e\right)+1\right)^{m},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral((-c*sec(f*x + e) + c)^n*(sec(f*x + e) + 1)^m, x)
```

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

$$\int\left(-c\sec\left(fx+e\right)+c\right)^{n}\left(\sec\left(fx+e\right)+1\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate((-c*sec(f*x + e) + c)^n*(sec(f*x + e) + 1)^m, x)
```

maple [F] time = 2.14, size = 0, normalized size = 0.00

$$\int\left(1+\sec\left(fx+e\right)\right)^{m}\left(c-c\sec\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1+sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x)
[Out] int((1+sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x)
```

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

$$\int\left(-c\sec\left(fx+e\right)+c\right)^{n}\left(\sec\left(fx+e\right)+1\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((-c*sec(f*x + e) + c)^n*(sec(f*x + e) + 1)^m, x)
```

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

$$\int{\left(\frac{1}{\cos\left(e+f\,x\right)}+1\right)}^m\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1/cos(e + f*x) + 1)^m*(c - c/cos(e + f*x))^n,x)
[Out] int((1/cos(e + f*x) + 1)^m*(c - c/cos(e + f*x))^n, x)
```

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

$$\int\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{n}\left(\sec\left(e+fx\right)+1\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+sec(f*x+e))**m*(c-c*sec(f*x+e))**n,x)
[Out] Integral((-c*(sec(e + f*x) - 1))**n*(sec(e + f*x) + 1)**m, x)
```

3.132 $\int (a + a\sec(e + fx))^m(c - c\sec(e + fx))^n\,dx$

Optimal. Leaf size=109

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(1-\sec(e+fx))^{\frac{1}{2}-n}(a\sec(e+fx)+a)^m(c-c\sec(e+fx))^{n-1}F_1\left(m+\frac{1}{2};\frac{1}{2}-n,1;m+\frac{3}{2};\frac{1}{2}(\sec(\right.}{f(2m+1)}$$

```
[Out] 2^(1/2+n)*c*AppellF1(1/2+m,1,1/2-n,3/2+m,1+sec(f*x+e),1/2+1/2*sec(f*x+e))*(
1-sec(f*x+e))^(1/2-n)*(a+a*sec(f*x+e))^m*(c-c*sec(f*x+e))^(-1+n)*tan(f*x+e)
/f/(1+2*m)
```

Rubi [A] time = 0.12, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$, Rules used = {3912, 137, 136}

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(1-\sec(e+fx))^{\frac{1}{2}-n}(a\sec(e+fx)+a)^m(c-c\sec(e+fx))^{n-1}F_1\left(m+\frac{1}{2};\frac{1}{2}-n,1;m+\frac{3}{2};\frac{1}{2}(\sec(\right.}{f(2m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^m*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (2^(1/2 + n)*c*AppellF1[1/2 + m, 1/2 - n, 1, 3/2 + m, (1 + Sec[e + f*x])/2,
 1 + Sec[e + f*x]]*(1 - Sec[e + f*x])^(1/2 - n)*(a + a*Sec[e + f*x])^m*(c -
 c*Sec[e + f*x])^(-1 + n)*Tan[e + f*x])/(f*(1 + 2*m))
```

Rule 136

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Simp[((b*e - a*f)^p*(a + b*x)^(m + 1)*AppellF1[m + 1, -
n, -p, m + 2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/
(b^(p + 1)*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] && GtQ[b/(b*c - a*d),
 0] &&  !(GtQ[d/(d*a - c*b), 0] && SimplerQ[c + d*x, a + b*x])
```

Rule 137

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Dist[(c + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*
((b*(c + d*x))/(b*c - a*d))^FracPart[n]), Int[(a + b*x)^m*((b*c)/(b*c - a*d
) + (b*d*x)/(b*c - a*d))^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f,
m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] &&  !GtQ[b/(b*c
- a*d), 0] &&  !SimplerQ[c + d*x, a + b*x]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a+a\sec(e+fx))^m(c-c\sec(e+fx))^n\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(a+ax)^{-\frac{1}{2}+m}(c-cx)^{-\frac{1}{2}+n}}{x}dx, x, \sec(e+f\right.}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{\left(2^{-\frac{1}{2}+n}ac(c-c\sec(e+fx))^{-1+n}\left(\frac{c-c\sec(e+fx)}{c}\right)^{\frac{1}{2}-n}\tan(e+fx\right.}{f\sqrt{a+a\sec(e+}}$$

$$= \frac{2^{\frac{1}{2}+n}cF_1\left(\frac{1}{2}+m;\frac{1}{2}-n,1;\frac{3}{2}+m;\frac{1}{2}(1+\sec(e+fx)),1+\sec(e\right.}{}$$

Mathematica [F] time = 0.44, size = 0, normalized size = 0.00

$$\int (a+a\sec(e+fx))^m(c-c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + a*Sec[e + f*x])^m*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[(a + a*Sec[e + f*x])^m*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sec\left(fx+e\right)+a\right)^m\left(-c\sec\left(fx+e\right)+c\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a*sec(f*x + e) + a)^m*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^m\left(-c\sec\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*sec(f*x + e) + a)^m*(-c*sec(f*x + e) + c)^n, x)
```

maple [F] time = 2.39, size = 0, normalized size = 0.00

$$\int \left(a+a\sec\left(fx+e\right)\right)^m\left(c-c\sec\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x)
[Out] int((a+a*sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^m\left(-c\sec\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^m*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((a*sec(f*x + e) + a)^m*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^m\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^m*(c - c/cos(e + f*x))^n,x)
```

```
[Out] int((a + a/cos(e + f*x))^m*(c - c/cos(e + f*x))^n, x)
```

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

$$\int \left(a \left(\sec{\left(e + f x \right)} + 1\right)\right)^{m} \left(- c \left(\sec{\left(e + f x \right)} - 1\right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**m*(c-c*sec(f*x+e))**n,x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**m*(-c*(sec(e + f*x) - 1))**n, x)
```

3.133 $\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^n\,dx$

Optimal. Leaf size=101

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(a\sec(e+fx)+a)^3(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(\frac{7}{2};\frac{1}{2}-n,1;\frac{9}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right.}{7f}$$

```
[Out] 1/7*2^(1/2+n)*c*AppellF1(7/2,1,1/2-n,9/2,1+sec(f*x+e),1/2+1/2*sec(f*x+e))*(
1-sec(f*x+e))^(1/2-n)*(a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^(-1+n)*tan(f*x+e)
/f
```

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3912, 137, 136}

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(a\sec(e+fx)+a)^3(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(\frac{7}{2};\frac{1}{2}-n,1;\frac{9}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right.}{7f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (2^(1/2 + n)*c*AppellF1[7/2, 1/2 - n, 1, 9/2, (1 + Sec[e + f*x])/2, 1 + Sec
[e + f*x]]*(1 - Sec[e + f*x])^(1/2 - n)*(a + a*Sec[e + f*x])^3*(c - c*Sec[e
 + f*x])^(-1 + n)*Tan[e + f*x])/(7*f)
```

Rule 136

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Simp[((b*e - a*f)^p*(a + b*x)^(m + 1)*AppellF1[m + 1, -
n, -p, m + 2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/
(b^(p + 1)*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] && GtQ[b/(b*c - a*d),
 0] &&  !(GtQ[d/(d*a - c*b), 0] && SimplerQ[c + d*x, a + b*x])
```

Rule 137

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Dist[(c + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*
((b*(c + d*x))/(b*c - a*d))^FracPart[n]), Int[(a + b*x)^m*((b*c)/(b*c - a*d
) + (b*d*x)/(b*c - a*d))^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f,
m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] &&  !GtQ[b/(b*c
- a*d), 0] &&  !SimplerQ[c + d*x, a + b*x]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^n\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(a+ax)^{5/2}(c-cx)^{-\frac{1}{2}+n}}{x}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{\left(2^{-\frac{1}{2}+n}ac(c-c\sec(e+fx))^{-1+n}\left(\frac{c-c\sec(e+fx)}{c}\right)^{\frac{1}{2}-n}\tan(e+fx)\right)\text{S}}{f\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2^{\frac{1}{2}+n}cF_1\left(\frac{7}{2};\frac{1}{2}-n,1;\frac{9}{2};\frac{1}{2}(1+\sec(e+fx)),1+\sec(e+fx)\right)(1-\text{s}}{}$$

Mathematica [F] time = 3.24, size = 0, normalized size = 0.00

$$\int (a+a\sec(e+fx))^3(c-c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[(a + a*Sec[e + f*x])^3*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^3\sec\left(fx+e\right)^3+3\,a^3\sec\left(fx+e\right)^2+3\,a^3\sec\left(fx+e\right)+a^3\right)\left(-c\sec\left(fx+e\right)+c\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a^3*sec(f*x + e)^3 + 3*a^3*sec(f*x + e)^2 + 3*a^3*sec(f*x + e) +
a^3)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^3\left(-c\sec\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*sec(f*x + e) + a)^3*(-c*sec(f*x + e) + c)^n, x)
```

maple [F] time = 2.86, size = 0, normalized size = 0.00

$$\int \left(a+a\sec\left(fx+e\right)\right)^3\left(c-c\sec\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^n,x)
[Out] int((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^n,x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^3\left(-c\sec\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^3*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((a*sec(f*x + e) + a)^3*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^3\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^n,x)
```

```
[Out] int((a + a/cos(e + f*x))^3*(c - c/cos(e + f*x))^n, x)
```

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

$$a^3 \left(\int 3\left(-c\sec\left(e+fx\right)+c\right)^n \sec\left(e+fx\right)dx+\int 3\left(-c\sec\left(e+fx\right)+c\right)^n \sec^2\left(e+fx\right)dx+\int \left(-c\sec\left(e+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**3*(c-c*sec(f*x+e))**n,x)
```

```
[Out] a**3*(Integral(3*(-c*sec(e + f*x) + c)**n*sec(e + f*x), x) + Integral(3*(-c
*sec(e + f*x) + c)**n*sec(e + f*x)**2, x) + Integral((-c*sec(e + f*x) + c)*
*n*sec(e + f*x)**3, x) + Integral((-c*sec(e + f*x) + c)**n, x))
```

3.134 $\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^n\,dx$

Optimal. Leaf size=101

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(a\sec(e+fx)+a)^2(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(\frac{5}{2};\frac{1}{2}-n,1;\frac{7}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)(\cdots}{5f}$$

```
[Out] 1/5*2^(1/2+n)*c*AppellF1(5/2,1,1/2-n,7/2,1+sec(f*x+e),1/2+1/2*sec(f*x+e))*(
1-sec(f*x+e))^(1/2-n)*(a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^(-1+n)*tan(f*x+e)
/f
```

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3912, 137, 136}

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(a\sec(e+fx)+a)^2(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(\frac{5}{2};\frac{1}{2}-n,1;\frac{7}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)(\cdots}{5f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (2^(1/2 + n)*c*AppellF1[5/2, 1/2 - n, 1, 7/2, (1 + Sec[e + f*x])/2, 1 + Sec
[e + f*x]]*(1 - Sec[e + f*x])^(1/2 - n)*(a + a*Sec[e + f*x])^2*(c - c*Sec[e
 + f*x])^(-1 + n)*Tan[e + f*x])/(5*f)
```

Rule 136

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Simp[((b*e - a*f)^p*(a + b*x)^(m + 1)*AppellF1[m + 1, -
n, -p, m + 2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/
(b^(p + 1)*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] && GtQ[b/(b*c - a*d),
 0] &&  !(GtQ[d/(d*a - c*b), 0] && SimplerQ[c + d*x, a + b*x])
```

Rule 137

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Dist[(c + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*
((b*(c + d*x))/(b*c - a*d))^FracPart[n]), Int[(a + b*x)^m*((b*c)/(b*c - a*d
) + (b*d*x)/(b*c - a*d))^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f,
m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] &&  !GtQ[b/(b*c
- a*d), 0] &&  !SimplerQ[c + d*x, a + b*x]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^n\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(a+ax)^{3/2}(c-cx)^{-\frac{1}{2}+n}}{x}dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{\left(2^{-\frac{1}{2}+n}ac(c-c\sec(e+fx))^{-1+n}\left(\frac{c-c\sec(e+fx)}{c}\right)^{\frac{1}{2}-n}\tan(e+fx)\right.}{f\sqrt{a+a\sec(e+}}$$

$$= \frac{2^{\frac{1}{2}+n}cF_1\left(\frac{5}{2};\frac{1}{2}-n,1;\frac{7}{2};\frac{1}{2}(1+\sec(e+fx)),1+\sec(e+fx)\right)(1}{}$$

Mathematica [F] time = 1.53, size = 0, normalized size = 0.00

$$\int (a+a\sec(e+fx))^2(c-c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[(a + a*Sec[e + f*x])^2*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2\right)\left(-c\sec\left(fx+e\right)+c\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*(-c*sec(f*x + e) +
 c)^n, x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^2\left(-c\sec\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*sec(f*x + e) + a)^2*(-c*sec(f*x + e) + c)^n, x)
```

maple [F] time = 2.29, size = 0, normalized size = 0.00

$$\int \left(a+a\sec\left(fx+e\right)\right)^2\left(c-c\sec\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^n,x)
[Out] int((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^n,x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^2\left(-c\sec\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^2*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((a*sec(f*x + e) + a)^2*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^2\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^n,x)
```

```
[Out] int((a + a/cos(e + f*x))^2*(c - c/cos(e + f*x))^n, x)
```

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

$$a^{2} \left(\int 2 \left(- c \sec{\left(e + f x \right)} + c\right)^{n} \sec{\left(e + f x \right)}\, dx + \int \left(- c \sec{\left(e + f x \right)} + c\right)^{n} \sec^{2}{\left(e + f x \right)}\, dx + \int \left(- c \sec{\left(e + f x \right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**2*(c-c*sec(f*x+e))**n,x)
```

```
[Out] a**2*(Integral(2*(-c*sec(e + f*x) + c)**n*sec(e + f*x), x) + Integral((-c*s
ec(e + f*x) + c)**n*sec(e + f*x)**2, x) + Integral((-c*sec(e + f*x) + c)**n
, x))
```

3.135 $\int (a + a\sec(e + fx))(c - c\sec(e + fx))^n \, dx$

Optimal. Leaf size=99

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(a\sec(e+fx)+a)(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(\frac{3}{2};\frac{1}{2}-n,1;\frac{5}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)}{3f}$$

```
[Out] 1/3*2^(1/2+n)*c*AppellF1(3/2,1,1/2-n,5/2,1+sec(f*x+e),1/2+1/2*sec(f*x+e))*(
1-sec(f*x+e))^(1/2-n)*(a+a*sec(f*x+e))*(c-c*sec(f*x+e))^(-1+n)*tan(f*x+e)/f
```

Rubi [A] time = 0.08, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {3912, 137, 136}

$$\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(a\sec(e+fx)+a)(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(\frac{3}{2};\frac{1}{2}-n,1;\frac{5}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (2^(1/2 + n)*c*AppellF1[3/2, 1/2 - n, 1, 5/2, (1 + Sec[e + f*x])/2, 1 + Sec
[e + f*x]]*(1 - Sec[e + f*x])^(1/2 - n)*(a + a*Sec[e + f*x])*(c - c*Sec[e +
 f*x])^(-1 + n)*Tan[e + f*x])/(3*f)
```

Rule 136

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Simp[((b*e - a*f)^p*(a + b*x)^(m + 1)*AppellF1[m + 1, -
n, -p, m + 2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/
(b^(p + 1)*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && !IntegerQ[m] && !IntegerQ[n] && IntegerQ[p] && GtQ[b/(b*c - a*d),
 0] && !(GtQ[d/(d*a - c*b), 0] && SimplerQ[c + d*x, a + b*x])
```

Rule 137

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Dist[(c + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*
((b*(c + d*x))/(b*c - a*d))^FracPart[n]), Int[(a + b*x)^m*((b*c)/(b*c - a*d
) + (b*d*x)/(b*c - a*d))^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f,
m, n}, x] && !IntegerQ[m] && !IntegerQ[n] && IntegerQ[p] && !GtQ[b/(b*c
- a*d), 0] && !SimplerQ[c + d*x, a + b*x]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a + a\sec(e+fx))(c - c\sec(e+fx))^n\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{\sqrt{a+ax}\,(c-cx)^{-\frac{1}{2}+n}}{x}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{\left(2^{-\frac{1}{2}+n}ac(c-c\sec(e+fx))^{-1+n}\left(\frac{c-c\sec(e+fx)}{c}\right)^{\frac{1}{2}-n}\tan(e+fx)\right)\text{Su}}{f\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2^{\frac{1}{2}+n}cF_1\left(\frac{3}{2};\frac{1}{2}-n,1;\frac{5}{2};\frac{1}{2}(1+\sec(e+fx)),1+\sec(e+fx)\right)(1-\text{se}}{3}$$

Mathematica [F] time = 1.60, size = 0, normalized size = 0.00

$$\int (a + a\sec(e+fx))(c - c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + a*Sec[e + f*x])*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[(a + a*Sec[e + f*x])*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sec\left(fx+e\right)+a\right)\left(-c\sec\left(fx+e\right)+c\right)^{n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)\left(-c\sec\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^n, x)
```

maple [F] time = 2.10, size = 0, normalized size = 0.00

$$\int \left(a+a\sec\left(fx+e\right)\right)\left(c-c\sec\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))*(c-c*sec(f*x+e))^n,x)
[Out] int((a+a*sec(f*x+e))*(c-c*sec(f*x+e))^n,x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)\left(-c\sec\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
```

```
[Out] integrate((a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))*(c - c/cos(e + f*x))^n,x)
```

```
[Out] int((a + a/cos(e + f*x))*(c - c/cos(e + f*x))^n, x)
```

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

$$a \left(\int \left(- c \sec{\left(e + f x \right)} + c\right)^{n} \sec{\left(e + f x \right)}\, dx + \int \left(- c \sec{\left(e + f x \right)} + c\right)^{n}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))*(c-c*sec(f*x+e))**n,x)
```

```
[Out] a*(Integral((-c*sec(e + f*x) + c)**n*sec(e + f*x), x) + Integral((-c*sec(e
+ f*x) + c)**n, x))
```

3.136 $\int \frac{(c-c\sec(e+fx))^n}{a+a\sec(e+fx)}\,dx$

Optimal. Leaf size=99

$$-\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(-\frac{1}{2};\frac{1}{2}-n,1;\frac{1}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)(c-c\sec(e+fx)}{f(a\sec(e+fx)+a)}$$

```
[Out] -2^(1/2+n)*c*AppellF1(-1/2,1,1/2-n,1/2,1+sec(f*x+e),1/2+1/2*sec(f*x+e))*(1-
sec(f*x+e))^(1/2-n)*(c-c*sec(f*x+e))^(-1+n)*tan(f*x+e)/f/(a+a*sec(f*x+e))
```

Rubi [A] time = 0.10, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3912, 137, 136}

$$-\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(-\frac{1}{2};\frac{1}{2}-n,1;\frac{1}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)(c-c\sec(e+fx)}{f(a\sec(e+fx)+a)}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x]),x]
```

```
[Out] -((2^(1/2 + n)*c*AppellF1[-1/2, 1/2 - n, 1, 1/2, (1 + Sec[e + f*x])/2, 1 +
Sec[e + f*x]]*(1 - Sec[e + f*x])^(1/2 - n)*(c - c*Sec[e + f*x])^(-1 + n)*Ta
n[e + f*x])/(f*(a + a*Sec[e + f*x])))
```

Rule 136

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Simp[((b*e - a*f)^p*(a + b*x)^(m + 1)*AppellF1[m + 1, -
n, -p, m + 2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/
(b^(p + 1)*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && !IntegerQ[m] && !IntegerQ[n] && IntegerQ[p] && GtQ[b/(b*c - a*d),
 0] && !(GtQ[d/(d*a - c*b), 0] && SimplerQ[c + d*x, a + b*x])
```

Rule 137

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Dist[(c + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*
((b*(c + d*x))/(b*c - a*d))^FracPart[n]), Int[(a + b*x)^m*((b*c)/(b*c - a*d
) + (b*d*x)/(b*c - a*d))^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f,
m, n}, x] && !IntegerQ[m] && !IntegerQ[n] && IntegerQ[p] && !GtQ[b/(b*c
- a*d), 0] && !SimplerQ[c + d*x, a + b*x]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^n}{a+a\sec(e+fx)}\,dx = -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}}{x(a+ax)^{3/2}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{\left(2^{-\frac{1}{2}+n}ac(c-c\sec(e+fx))^{-1+n}\left(\frac{c-c\sec(e+fx)}{c}\right)^{\frac{1}{2}-n}\tan(e+fx)\right)\mathrm{Subst}\left(\int \frac{\left(\frac{1}{2}-\frac{x}{2}\right)^{-\frac{1}{2}}}{x(a+ax)^{3}}\right.}{f\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{2^{\frac{1}{2}+n}cF_1\left(-\frac{1}{2};\frac{1}{2}-n,1;\frac{1}{2};\frac{1}{2}(1+\sec(e+fx)),1+\sec(e+fx)\right)(1-\sec(e+fx))^{\frac{1}{2}}}{f(a+a\sec(e+fx))}$$

Mathematica [F] time = 1.00, size = 0, normalized size = 0.00

$$\int \frac{(c-c\sec(e+fx))^n}{a+a\sec(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x]),x]
[Out] Integrate[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x]), x]
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{a\sec\left(fx+e\right)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e)),x, algorithm="fricas")
[Out] integral((-c*sec(f*x + e) + c)^n/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e)),x, algorithm="giac")
[Out] integrate((-c*sec(f*x + e) + c)^n/(a*sec(f*x + e) + a), x)
```

maple [F] time = 2.27, size = 0, normalized size = 0.00

$$\int \frac{\left(c-c\sec\left(fx+e\right)\right)^n}{a+a\sec\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e)),x)
[Out] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e)),x)
```

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

$$\int \frac{\left(-c\sec\left(fx+e\right)+c\right)^{n}}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((-c*sec(f*x + e) + c)^n/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{n}}{a+\frac{a}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x)),x)
```

```
[Out] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x)), x)
```

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

$$\frac{\int \frac{\left(-c\sec\left(e+fx\right)+c\right)^{n}}{\sec\left(e+fx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**n/(a+a*sec(f*x+e)),x)
```

```
[Out] Integral((-c*sec(e + f*x) + c)**n/(sec(e + f*x) + 1), x)/a
```

3.137 $\int \frac{(c-c\sec(e+fx))^n}{(a+a\sec(e+fx))^2}\,dx$

Optimal. Leaf size=101

$$-\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(-\frac{3}{2};\frac{1}{2}-n,1;-\frac{1}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)(c-c\sec(e+}{3f(a\sec(e+fx)+a)^2}$$

```
[Out] -1/3*2^(1/2+n)*c*AppellF1(-3/2,1,1/2-n,-1/2,1+sec(f*x+e),1/2+1/2*sec(f*x+e)
)*(1-sec(f*x+e))^(1/2-n)*(c-c*sec(f*x+e))^(-1+n)*tan(f*x+e)/f/(a+a*sec(f*x+
e))^2
```

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {3912, 137, 136}

$$-\frac{c2^{n+\frac{1}{2}}\tan(e+fx)(1-\sec(e+fx))^{\frac{1}{2}-n}F_1\left(-\frac{3}{2};\frac{1}{2}-n,1;-\frac{1}{2};\frac{1}{2}(\sec(e+fx)+1),\sec(e+fx)+1\right)(c-c\sec(e+}{3f(a\sec(e+fx)+a)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] -(2^(1/2 + n)*c*AppellF1[-3/2, 1/2 - n, 1, -1/2, (1 + Sec[e + f*x])/2, 1 +
Sec[e + f*x]]*(1 - Sec[e + f*x])^(1/2 - n)*(c - c*Sec[e + f*x])^(-1 + n)*Ta
n[e + f*x])/(3*f*(a + a*Sec[e + f*x])^2)
```

Rule 136

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Simp[((b*e - a*f)^p*(a + b*x)^(m + 1)*AppellF1[m + 1, -
n, -p, m + 2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/
(b^(p + 1)*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] && GtQ[b/(b*c - a*d),
 0] &&  !(GtQ[d/(d*a - c*b), 0] && SimplerQ[c + d*x, a + b*x])
```

Rule 137

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_))
^(p_), x_Symbol] :> Dist[(c + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*
((b*(c + d*x))/(b*c - a*d))^FracPart[n]), Int[(a + b*x)^m*((b*c)/(b*c - a*d
) + (b*d*x)/(b*c - a*d))^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f,
m, n}, x] &&  !IntegerQ[m] &&  !IntegerQ[n] && IntegerQ[p] &&  !GtQ[b/(b*c
- a*d), 0] &&  !SimplerQ[c + d*x, a + b*x]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^n}{(a+a\sec(e+fx))^2}\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}}{x(a+ax)^{5/2}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{\left(2^{-\frac{1}{2}+n}ac(c-c\sec(e+fx))^{-1+n}\left(\frac{c-c\sec(e+fx)}{c}\right)^{\frac{1}{2}-n}\tan(e+fx)\right)\text{Subst}\left(\int \frac{\left(\frac{1}{2}-\frac{x}{2}\right)^{-\frac{1}{2}+n}}{x(a+ax)^{5/2}} \cdots\right.}{f\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{2^{\frac{1}{2}+n}cF_1\left(-\frac{3}{2};\frac{1}{2}-n,1;-\frac{1}{2};\frac{1}{2}(1+\sec(e+fx)),1+\sec(e+fx)\right)(1-\sec(e+fx))^{\frac{1}{2}-\cdots}}{3f(a+a\sec(e+fx))^2}$$

Mathematica [F] time = 1.73, size = 0, normalized size = 0.00

$$\int \frac{(c-c\sec(e+fx))^n}{(a+a\sec(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] Integrate[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x])^2, x]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral((-c*sec(f*x + e) + c)^n/(a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) +
 a^2), x)
```

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

$$\int \frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{\left(a\sec\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((-c*sec(f*x + e) + c)^n/(a*sec(f*x + e) + a)^2, x)
```

maple [F] time = 1.75, size = 0, normalized size = 0.00

$$\int \frac{\left(c-c\sec\left(fx+e\right)\right)^n}{\left(a+a\sec\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^2,x)
```

```
[Out] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^2,x)
```

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

$$\int \frac{\left(-c\sec\left(fx+e\right)+c\right)^{n}}{\left(a\sec\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] integrate((-c*sec(f*x + e) + c)^n/(a*sec(f*x + e) + a)^2, x)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{n}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x))^2,x)
```

```
[Out] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x))^2, x)
```

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

$$\frac{\int \frac{\left(-c\sec\left(e+fx\right)+c\right)^{n}}{\sec^{2}\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**n/(a+a*sec(f*x+e))**2,x)
```

```
[Out] Integral((-c*sec(e + f*x) + c)**n/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1), x
)/a**2
```

3.138 $\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^n\,dx$

Optimal. Leaf size=172

$$\frac{2a^3\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}+\frac{6a^3\tan(e+fx)(c-c\sec(e+fx))^n}{f(2n+1)\sqrt{a\sec(e+fx)+a}}-\frac{2a}{}$$

```
[Out] 6*a^3*(c-c*sec(f*x+e))^n*tan(f*x+e)/f/(1+2*n)/(a+a*sec(f*x+e))^(1/2)+2*a^3*
hypergeom([1, 1/2+n],[3/2+n],1-sec(f*x+e))*(c-c*sec(f*x+e))^n*tan(f*x+e)/f/
(1+2*n)/(a+a*sec(f*x+e))^(1/2)-2*a^3*(c-c*sec(f*x+e))^(1+n)*tan(f*x+e)/c/f/
(3+2*n)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.107$, Rules used = {3912, 88, 65}

$$\frac{2a^3\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}+\frac{6a^3\tan(e+fx)(c-c\sec(e+fx))^n}{f(2n+1)\sqrt{a\sec(e+fx)+a}}-\frac{2a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (6*a^3*(c - c*Sec[e + f*x])^n*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[a + a*Sec[e +
 f*x]]) + (2*a^3*Hypergeometric2F1[1, 1/2 + n, 3/2 + n, 1 - Sec[e + f*x]]*(
c - c*Sec[e + f*x])^n*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[a + a*Sec[e + f*x]])
- (2*a^3*(c - c*Sec[e + f*x])^(1 + n)*Tan[e + f*x])/(c*f*(3 + 2*n)*Sqrt[a +
 a*Sec[e + f*x]])
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^n\,dx = -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \frac{(a+ax)^2(c-cx)^{-\frac{1}{2}+n}}{x}\,dx, x, \sec(e+fx)\right.}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{(ac\tan(e+fx))\,\mathrm{Subst}\left(\int \left(3a^2(c-cx)^{-\frac{1}{2}+n} + \frac{a^2(c-cx)^{-\frac{1}{2}+n}}{x} - \right.\right.}{f\sqrt{a+a\sec(e+fx)}\sqrt{c-c\sec(e+}}$$

$$= \frac{6a^3(c-c\sec(e+fx))^n\tan(e+fx)}{f(1+2n)\sqrt{a+a\sec(e+fx)}} - \frac{2a^3(c-c\sec(e+fx))^{1}}{cf(3+2n)\sqrt{a+a\,\mathrm{s}}}$$

$$= \frac{6a^3(c-c\sec(e+fx))^n\tan(e+fx)}{f(1+2n)\sqrt{a+a\sec(e+fx)}} + \frac{2a^3\,{}_2F_1\left(1,\frac{1}{2}+n;\frac{3}{2}+n\right.}{f}$$

Mathematica [F] time = 8.54, size = 0, normalized size = 0.00

$$\int (a+a\sec(e+fx))^{5/2}(c-c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(a^2\sec\left(fx+e\right)^2 + 2\,a^2\sec\left(fx+e\right) + a^2\right)\sqrt{a\sec\left(fx+e\right)+a}\left(-c\sec\left(fx+e\right)+c\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*sqrt(a*sec(f*x + e
) + a)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(-c\sec\left(fx+e\right)+c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*sec(f*x + e) + a)^(5/2)*(-c*sec(f*x + e) + c)^n, x)
```

maple [F] time = 1.74, size = 0, normalized size = 0.00

$$\int \left(a+a\sec\left(fx+e\right)\right)^{\frac{5}{2}}\left(c-c\sec\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^n,x)
[Out] int((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^n,x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(-c\sec\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((a*sec(f*x + e) + a)^(5/2)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}\,{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)}^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(e + f*x))^n,x)
[Out] int((a + a/cos(e + f*x))^(5/2)*(c - c/cos(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+a*sec(f*x+e))**(5/2)*(c-c*sec(f*x+e))**n,x)
[Out] Timed out
```

3.139 $\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^n\,dx$

Optimal. Leaf size=119

$$\frac{2a^2\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}+\frac{2a^2\tan(e+fx)(c-c\sec(e+fx))^n}{f(2n+1)\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*a^2*(c-c*sec(f*x+e))^n*tan(f*x+e)/f/(1+2*n)/(a+a*sec(f*x+e))^(1/2)+2*a^2*
hypergeom([1, 1/2+n],[3/2+n],1-sec(f*x+e))*(c-c*sec(f*x+e))^n*tan(f*x+e)/f/
(1+2*n)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107, Rules used = {3909, 3912, 65}

$$\frac{2a^2\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}+\frac{2a^2\tan(e+fx)(c-c\sec(e+fx))^n}{f(2n+1)\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (2*a^2*(c - c*Sec[e + f*x])^n*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[a + a*Sec[e +
 f*x]]) + (2*a^2*Hypergeometric2F1[1, 1/2 + n, 3/2 + n, 1 - Sec[e + f*x]]*(
c - c*Sec[e + f*x])^n*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[a + a*Sec[e + f*x]])
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 3909

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Simp[(-2*a^2*Cot[e + f*x]*(c + d*Csc[e + f
*x])^n)/(f*(2*n + 1)*Sqrt[a + b*Csc[e + f*x]]), x] + Dist[a, Int[Sqrt[a + b
*Csc[e + f*x]]*(c + d*Csc[e + f*x])^n, x], x] /; FreeQ[{a, b, c, d, e, f, n
}, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0] &&  !LeQ[n, -2^(-1)]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^n\,dx = \frac{2a^2(c-c\sec(e+fx))^n\tan(e+fx)}{f(1+2n)\sqrt{a+a\sec(e+fx)}} + a\int \sqrt{a+a\sec(e+fx)}\,(c$$

$$= \frac{2a^2(c-c\sec(e+fx))^n\tan(e+fx)}{f(1+2n)\sqrt{a+a\sec(e+fx)}} - \frac{\left(a^2c\tan(e+fx)\right)\operatorname{Subst}\Bigg(}{f\sqrt{a+a\sec(e+f}}$$

$$= \frac{2a^2(c-c\sec(e+fx))^n\tan(e+fx)}{f(1+2n)\sqrt{a+a\sec(e+fx)}} + \frac{2a^2\,{}_2F_1\left(1,\frac{1}{2}+n;\frac{3}{2}+n;1\right.}{f(1}$$

Mathematica [F] time = 11.83, size = 0, normalized size = 0.00

$$\int (a+a\sec(e+fx))^{3/2}(c-c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-c\sec\left(fx+e\right)+c\right)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral((a*sec(f*x + e) + a)^(3/2)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-c\sec\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate((a*sec(f*x + e) + a)^(3/2)*(-c*sec(f*x + e) + c)^n, x)
```

maple [F] time = 1.73, size = 0, normalized size = 0.00

$$\int \left(a+a\sec\left(fx+e\right)\right)^{\frac{3}{2}}\left(c-c\sec\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^n,x)
[Out] int((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^n,x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(-c\sec\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((a*sec(f*x + e) + a)^(3/2)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^n \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(e + f*x))^n,x)
[Out] int((a + a/cos(e + f*x))^(3/2)*(c - c/cos(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+a*sec(f*x+e))**(3/2)*(c-c*sec(f*x+e))**n,x)
[Out] Timed out
```

3.140 $\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^n\,dx$

Optimal. Leaf size=68

$$\frac{2a\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*a*hypergeom([1, 1/2+n],[3/2+n],1-sec(f*x+e))*(c-c*sec(f*x+e))^n*tan(f*x+e
)/f/(1+2*n)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {3912, 65}

$$\frac{2a\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^n,x]
```

```
[Out] (2*a*Hypergeometric2F1[1, 1/2 + n, 3/2 + n, 1 - Sec[e + f*x]]*(c - c*Sec[e
+ f*x])^n*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[a + a*Sec[e + f*x]])
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^n\,dx &= -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}}{x}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}\\ &= \frac{2a\,{}_2F_1\left(1,\frac{1}{2}+n;\frac{3}{2}+n;1-\sec(e+fx)\right)(c-c\sec(e+fx))^n\tan(e}{f(1+2n)\sqrt{a+a\sec(e+fx)}}\end{aligned}$$

Mathematica [F] time = 0.14, size = 0, normalized size = 0.00

$$\int \sqrt{a+a\sec(e+fx)}\,(c-c\sec(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^n,x]
[Out] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c - c*Sec[e + f*x])^n, x]
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{a\sec\left(fx+e\right)+a}\left(-c\sec\left(fx+e\right)+c\right)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)*(c-c*sec(f*x+e))^n,x, algorithm="fricas")
[Out] integral(sqrt(a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int\sqrt{a\sec\left(fx+e\right)+a}\left(-c\sec\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)*(c-c*sec(f*x+e))^n,x, algorithm="giac")
[Out] integrate(sqrt(a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^n, x)
```

maple [F] time = 1.88, size = 0, normalized size = 0.00

$$\int\sqrt{a+a\sec\left(fx+e\right)}\,\left(c-c\sec\left(fx+e\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)*(c-c*sec(f*x+e))^n,x)
[Out] int((a+a*sec(f*x+e))^(1/2)*(c-c*sec(f*x+e))^n,x)
```

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

$$\int\sqrt{a\sec\left(fx+e\right)+a}\left(-c\sec\left(fx+e\right)+c\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)*(c-c*sec(f*x+e))^n,x, algorithm="maxima")
[Out] integrate(sqrt(a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^n, x)
```

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

$$\int\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^n,x)
[Out] int((a + a/cos(e + f*x))^(1/2)*(c - c/cos(e + f*x))^n, x)
```

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

$$\int\sqrt{a\left(\sec\left(e+fx\right)+1\right)}\,\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)*(c-c*sec(f*x+e))**n,x)
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*(-c*(sec(e + f*x) - 1))**n, x)
```

3.141 $\int \frac{(c-c\sec(e+fx))^n}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=139

$$\frac{2\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}-\frac{\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\right.}{f(2n+1)\sqrt{a\sec(e+}}$$

```
[Out] -hypergeom([1, 1/2+n],[3/2+n],1/2-1/2*sec(f*x+e))*(c-c*sec(f*x+e))^n*tan(f*
x+e)/f/(1+2*n)/(a+a*sec(f*x+e))^(1/2)+2*hypergeom([1, 1/2+n],[3/2+n],1-sec(
f*x+e))*(c-c*sec(f*x+e))^n*tan(f*x+e)/f/(1+2*n)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3912, 86, 65, 68}

$$\frac{2\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};1-\sec(e+fx)\right)}{f(2n+1)\sqrt{a\sec(e+fx)+a}}-\frac{\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\right.}{f(2n+1)\sqrt{a\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^n/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] -((Hypergeometric2F1[1, 1/2 + n, 3/2 + n, (1 - Sec[e + f*x])/2]*(c - c*Sec[
e + f*x])^n*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[a + a*Sec[e + f*x]])) + (2*Hype
rgeometric2F1[1, 1/2 + n, 3/2 + n, 1 - Sec[e + f*x]]*(c - c*Sec[e + f*x])^n
*Tan[e + f*x])/(f*(1 + 2*n)*Sqrt[a + a*Sec[e + f*x]])
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] && !IntegerQ[m] && IntegerQ[n]
```

Rule 86

```
Int[((e_.) + (f_.)*(x_))^(p_)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
x_Symbol] :> Dist[b/(b*c - a*d), Int[(e + f*x)^p/(a + b*x), x], x] - Dist[d
/(b*c - a*d), Int[(e + f*x)^p/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f,
 p}, x] && !IntegerQ[p]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^n}{\sqrt{a+a\sec(e+fx)}}\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}}{x(a+ax)}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{(c\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}}{x}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}} + \frac{(ac\tan(e+fx))\,\text{Subst}\left(\right.}{f\sqrt{a+a\sec(e+}}$$

$$= -\frac{{}_2F_1\left(1,\frac{1}{2}+n;\frac{3}{2}+n;\frac{1}{2}(1-\sec(e+fx))\right)(c-c\sec(e+fx))^n\tan(e+fx)}{f(1+2n)\sqrt{a+a\sec(e+fx)}} + \frac{2\,{}_2F}{}$$

Mathematica [F] time = 1.36, size = 0, normalized size = 0.00

$$\int \frac{(c-c\sec(e+fx))^n}{\sqrt{a+a\sec(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c - c*Sec[e + f*x])^n/Sqrt[a + a*Sec[e + f*x]],x]
[Out] Integrate[(c - c*Sec[e + f*x])^n/Sqrt[a + a*Sec[e + f*x]], x]
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{\sqrt{a\sec\left(fx+e\right)+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
[Out] integral((-c*sec(f*x + e) + c)^n/sqrt(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{\sqrt{a\sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(1/2),x, algorithm="giac")
[Out] integrate((-c*sec(f*x + e) + c)^n/sqrt(a*sec(f*x + e) + a), x)
```

maple [F] time = 1.93, size = 0, normalized size = 0.00

$$\int \frac{\left(c-c\sec\left(fx+e\right)\right)^n}{\sqrt{a+a\sec\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(1/2),x)
[Out] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(1/2),x)
```

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

$$\int \frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{\sqrt{a\sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((-c*sec(f*x + e) + c)^n/sqrt(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(c-\frac{c}{\cos\left(e+f\,x\right)}\right)^n}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x))^(1/2),x)
[Out] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(-c\left(\sec\left(e+fx\right)-1\right)\right)^n}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**n/(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral((-c*(sec(e + f*x) - 1))**n/sqrt(a*(sec(e + f*x) + 1)), x)
```

3.142 $\int \frac{(c-c\sec(e+fx))^n}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=205

$$-\frac{(5-2n)\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};\frac{1}{2}(1-\sec(e+fx))\right)}{4af(2n+1)\sqrt{a\sec(e+fx)+a}}+\frac{2\tan(e+fx)(c-c\sec(e+}{af(2n}$$

```
[Out] -1/4*(5-2*n)*hypergeom([1, 1/2+n],[3/2+n],1/2-1/2*sec(f*x+e))*(c-c*sec(f*x+
e))^n*tan(f*x+e)/a/f/(1+2*n)/(a+a*sec(f*x+e))^(1/2)+2*hypergeom([1, 1/2+n],
[3/2+n],1-sec(f*x+e))*(c-c*sec(f*x+e))^n*tan(f*x+e)/a/f/(1+2*n)/(a+a*sec(f*
x+e))^(1/2)-1/2*(c-c*sec(f*x+e))^n*tan(f*x+e)/a/f/(1+sec(f*x+e))/(a+a*sec(f
*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {3912, 103, 156, 65, 68}

$$-\frac{(5-2n)\tan(e+fx)(c-c\sec(e+fx))^n\,{}_2F_1\left(1,n+\frac{1}{2};n+\frac{3}{2};\frac{1}{2}(1-\sec(e+fx))\right)}{4af(2n+1)\sqrt{a\sec(e+fx)+a}}+\frac{2\tan(e+fx)(c-c\sec(e+}{af(2n}$$

Antiderivative was successfully verified.

```
[In] Int[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] -((5 - 2*n)*Hypergeometric2F1[1, 1/2 + n, 3/2 + n, (1 - Sec[e + f*x])/2]*(c
 - c*Sec[e + f*x])^n*Tan[e + f*x])/(4*a*f*(1 + 2*n)*Sqrt[a + a*Sec[e + f*x]
]) + (2*Hypergeometric2F1[1, 1/2 + n, 3/2 + n, 1 - Sec[e + f*x]]*(c - c*Sec
[e + f*x])^n*Tan[e + f*x])/(a*f*(1 + 2*n)*Sqrt[a + a*Sec[e + f*x]]) - ((c -
 c*Sec[e + f*x])^n*Tan[e + f*x])/(2*a*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e
 + f*x]])
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 103

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_
))^(p_.), x_Symbol] :> Simp[(b*(a + b*x)^(m + 1)*(c + d*x)^(n + 1)*(e + f*x
)^(p + 1))/((m + 1)*(b*c - a*d)*(b*e - a*f)), x] + Dist[1/((m + 1)*(b*c - a
*d)*(b*e - a*f)), Int[(a + b*x)^(m + 1)*(c + d*x)^n*(e + f*x)^p*Simp[a*d*f*
(m + 1) - b*(d*e*(m + n + 2) + c*f*(m + p + 2)) - b*d*f*(m + n + p + 3)*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && LtQ[m, -1] && IntegerQ[
m] && (IntegerQ[n] || IntegersQ[2*n, 2*p])
```

Rule 156

```
Int[(((e_.) + (f_.)*(x_))^(p_)*((g_.) + (h_.)*(x_)))/(((a_.) + (b_.)*(x_))*
((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[(b*g - a*h)/(b*c - a*d), Int[(e +
```

```
f*x)^p/(a + b*x), x], x] - Dist[(d*g - c*h)/(b*c - a*d), Int[(e + f*x)^p/(c
 + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, h}, x]
```

Rule 3912

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a*c*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^(n - 1/2))/x, x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}
, x] && EqQ[b*c + a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{(c-c\sec(e+fx))^n}{(a+a\sec(e+fx))^{3/2}}\,dx = -\frac{(ac\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}}{x(a+ax)^2}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\sec(e+fx)}}$$

$$= -\frac{(c-c\sec(e+fx))^n\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} - \frac{\tan(e+fx)\,\text{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}\left(2ac-\frac{1}{2}a\right.}{x(a+ax)}\right.}{2af\sqrt{a+a\sec(e+fx)}\,\sqrt{c}}$$

$$= -\frac{(c-c\sec(e+fx))^n\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} - \frac{(c\tan(e+fx))\,\text{Subst}\left(\int \frac{(c-cx)^{-\frac{1}{2}+n}}{x}\,dx\right.}{af\sqrt{a+a\sec(e+fx)}\,\sqrt{c-c\,\text{se}}}$$

$$= -\frac{(5-2n)\,{}_2F_1\left(1,\frac{1}{2}+n;\frac{3}{2}+n;\frac{1}{2}(1-\sec(e+fx))\right)(c-c\sec(e+fx))^n\tan(e+fx)}{4af(1+2n)\sqrt{a+a\sec(e+fx)}}$$

Mathematica [F] time = 1.76, size = 0, normalized size = 0.00

$$\int \frac{(c-c\sec(e+fx))^n}{(a+a\sec(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x])^(3/2),x]
[Out] Integrate[(c - c*Sec[e + f*x])^n/(a + a*Sec[e + f*x])^(3/2), x]
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sec\left(fx+e\right)+a}\left(-c\sec\left(fx+e\right)+c\right)^n}{a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
[Out] integral(sqrt(a*sec(f*x + e) + a)*(-c*sec(f*x + e) + c)^n/(a^2*sec(f*x + e)
^2 + 2*a^2*sec(f*x + e) + a^2), x)
```

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

$$\int \frac{\left(-c\sec\left(fx+e\right)+c\right)^n}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(3/2),x, algorithm="giac")
[Out] integrate((-c*sec(f*x + e) + c)^n/(a*sec(f*x + e) + a)^(3/2), x)
```

maple [F] time = 2.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c - c\sec\left(fx + e\right)\right)^{n}}{\left(a + a\sec\left(fx + e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(3/2),x)
[Out] int((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(3/2),x)
```

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

$$\int \frac{\left(-c\sec\left(fx + e\right) + c\right)^{n}}{\left(a\sec\left(fx + e\right) + a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))^n/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate((-c*sec(f*x + e) + c)^n/(a*sec(f*x + e) + a)^(3/2), x)
```

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

$$\int \frac{\left(c - \frac{c}{\cos\left(e+f\,x\right)}\right)^{n}}{\left(a + \frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x))^(3/2),x)
[Out] int((c - c/cos(e + f*x))^n/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\left(-c\left(\sec\left(e + fx\right) - 1\right)\right)^{n}}{\left(a\left(\sec\left(e + fx\right) + 1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c-c*sec(f*x+e))**n/(a+a*sec(f*x+e))**(3/2),x)
[Out] Integral((-c*(sec(e + f*x) - 1))**n/(a*(sec(e + f*x) + 1))**(3/2), x)
```

3.143 $\int \frac{\sqrt{a+a\sec(e+fx)}}{c+c\sec(e+fx)}\,dx$

Optimal. Leaf size=91

$$\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}-\frac{\sqrt{2}\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{cf}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/c/f-arctan(1/2*
a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)*a^(1/2)/c/f
```

Rubi [A] time = 0.08, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {21, 3776, 3774, 203, 3795}

$$\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}-\frac{\sqrt{2}\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{cf}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c + c*Sec[e + f*x]),x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c*f) -
 (Sqrt[2]*Sqrt[a]*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e +
 f*x]])])/(c*f)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + 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 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3776

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[1/a, In
t[Sqrt[a + b*Csc[c + d*x]], x], x] - Dist[b/a, Int[Csc[c + d*x]/Sqrt[a + b*
Csc[c + d*x]], x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3795

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Dist[-2/f, Subst[Int[1/(2*a + x^2), x], x, (b*Cot[e + f*x])/Sqrt[
a + b*Csc[e + f*x]]], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{a+a\sec(e+fx)}}{c+c\sec(e+fx)}\,dx &= \frac{a\int \frac{1}{\sqrt{a+a\sec(e+fx)}}\,dx}{c} \\
&= \frac{\int \sqrt{a+a\sec(e+fx)}\,dx}{c} - \frac{a\int \frac{\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx}{c} \\
&= -\frac{(2a)\operatorname{Subst}\left(\int \frac{1}{a+x^2}\,dx, x, -\frac{a\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} + \frac{(2a)\operatorname{Subst}\left(\int \frac{1}{2a+x^2}\,dx, x, -\frac{a\tan(e+}{\sqrt{a+a\sec(}}\right.}{cf} \\
&= \frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} - \frac{\sqrt{2}\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{cf}
\end{aligned}
$$

Mathematica [C] time = 0.65, size = 133, normalized size = 1.46

$$
-\frac{i\sqrt{1+e^{2i(e+fx)}}\sqrt{a(\sec(e+fx)+1)}\left(\sinh^{-1}\left(e^{i(e+fx)}\right)-\sqrt{2}\tanh^{-1}\left(\frac{-1+e^{i(e+fx)}}{\sqrt{2}\sqrt{1+e^{2i(e+fx)}}}\right)-\tanh^{-1}\left(\sqrt{1+e^{2i(e+fx)}}\right)\right.}{cf\left(1+e^{i(e+fx)}\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c + c*Sec[e + f*x]),x]
```

```
[Out] ((-I)*Sqrt[1 + E^((2*I)*(e + f*x))]*(ArcSinh[E^(I*(e + f*x))] - Sqrt[2]*Arc
Tanh[(-1 + E^(I*(e + f*x)))/(Sqrt[2]*Sqrt[1 + E^((2*I)*(e + f*x))])] - ArcT
anh[Sqrt[1 + E^((2*I)*(e + f*x))]])*Sqrt[a*(1 + Sec[e + f*x])])/(c*(1 + E^(
I*(e + f*x)))*f)
```

fricas [A] time = 0.56, size = 293, normalized size = 3.22

$$
\left[\frac{\sqrt{2}\sqrt{-a}\log\left(\frac{2\sqrt{2}\sqrt{-a}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)+3a\cos(fx+e)^2+2a\cos(fx+e)-a}{\cos(fx+e)^2+2\cos(fx+e)+1}\right)+2\sqrt{-a}\log\left(\frac{2a\cos(fx+e)^2-2\sqrt{-}}{}\right.}{2cf}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+c*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(2)*sqrt(-a)*log((2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/co
s(f*x + e))*cos(f*x + e)*sin(f*x + e) + 3*a*cos(f*x + e)^2 + 2*a*cos(f*x +
e) - a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 2*sqrt(-a)*log((2*a*cos(f*
x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*
sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/(c*f), (sqrt(2)*sqr
t(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(s
qrt(a)*sin(f*x + e))) - 2*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x
+ e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))))/(c*f)]
```

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((a+a*sec(f*x+e))^(1/2)/(c+c*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)4*sqrt(
2)*(-1/8*sqrt(-a)*ln((sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(
f*x+exp(1))))^2)/c-1/4*a*sqrt(-a)*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2
+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*
tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(
a)-6*a))/sqrt(2)/c/abs(a))*sign(cos(f*x+exp(1)))/f
```

maple [A] time = 1.78, size = 141, normalized size = 1.55

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\left(\ln\left(-\frac{-\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)+\cos\left(fx+e\right)-1}{\sin\left(fx+e\right)}\right)+\sqrt{2}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{}}{2\cos\left(fx+e\right)}\right.\right.}{cf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c+c*sec(f*x+e)),x)
```

```
[Out] -1/c/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*(ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/s
in(f*x+e))+2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x
+e)/cos(f*x+e)*2^(1/2)))
```

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

$$\int \frac{\sqrt{a\sec\left(fx+e\right)+a}}{c\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+c*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sec(f*x + e) + a)/(c*sec(f*x + e) + c), x)
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{c+\frac{c}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c + c/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c + c/cos(e + f*x)), x)
```

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

$$\frac{\int \frac{\sqrt{a\sec\left(e+fx\right)+a}}{\sec\left(e+fx\right)+1}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c+c*sec(f*x+e)),x)
```

```
[Out] Integral(sqrt(a*sec(e + f*x) + a)/(sec(e + f*x) + 1), x)/c
```

3.144 $\int \frac{(c+d\sec(e+fx))^{3/2}}{a+a\sec(e+fx)}\,dx$

Optimal. Leaf size=231

$$-\frac{2c\cot(e+fx)\sqrt{-\frac{d(1-\sec(e+fx))}{c+d\sec(e+fx)}}\sqrt{\frac{d(\sec(e+fx)+1)}{c+d\sec(e+fx)}}(c+d\sec(e+fx))\Pi\left(\frac{c}{c+d};\sin^{-1}\left(\frac{\sqrt{c+d}}{\sqrt{c+d\sec(e+fx)}}\right)|\frac{c-d}{c+d}\right)}{af\sqrt{c+d}}-\frac{(c-d)\sqrt{\dots}}{\dots}$$

```
[Out] -2*c*cot(f*x+e)*EllipticPi((c+d)^(1/2)/(c+d*sec(f*x+e))^(1/2),c/(c+d),((c-d
)/(c+d))^(1/2))*(c+d*sec(f*x+e))*(-d*(1-sec(f*x+e))/(c+d*sec(f*x+e)))^(1/2)
*(d*(1+sec(f*x+e))/(c+d*sec(f*x+e)))^(1/2)/a/f/(c+d)^(1/2)-(c-d)*EllipticE(
tan(f*x+e)/(1+sec(f*x+e)),((c-d)/(c+d))^(1/2))*(1/(1+sec(f*x+e)))^(1/2)*(c+
d*sec(f*x+e))^(1/2)/a/f/((c+d*sec(f*x+e))/(c+d)/(1+sec(f*x+e)))^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3927, 3780, 3968}

$$-\frac{2c\cot(e+fx)\sqrt{-\frac{d(1-\sec(e+fx))}{c+d\sec(e+fx)}}\sqrt{\frac{d(\sec(e+fx)+1)}{c+d\sec(e+fx)}}(c+d\sec(e+fx))\Pi\left(\frac{c}{c+d};\sin^{-1}\left(\frac{\sqrt{c+d}}{\sqrt{c+d\sec(e+fx)}}\right)|\frac{c-d}{c+d}\right)}{af\sqrt{c+d}}-\frac{(c-d)\sqrt{\dots}}{\dots}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])^(3/2)/(a + a*Sec[e + f*x]),x]
```

```
[Out] (-2*c*Cot[e + f*x]*EllipticPi[c/(c + d), ArcSin[Sqrt[c + d]/Sqrt[c + d*Sec[
e + f*x]]], (c - d)/(c + d)]*Sqrt[-((d*(1 - Sec[e + f*x]))/(c + d*Sec[e + f
*x]))]*Sqrt[(d*(1 + Sec[e + f*x]))/(c + d*Sec[e + f*x])]*(c + d*Sec[e + f*x
]))/(a*Sqrt[c + d]*f) - ((c - d)*EllipticE[ArcSin[Tan[e + f*x]/(1 + Sec[e +
 f*x])], (c - d)/(c + d)]*Sqrt[(1 + Sec[e + f*x])^(-1)]*Sqrt[c + d*Sec[e +
f*x]])/(a*f*Sqrt[(c + d*Sec[e + f*x])/((c + d)*(1 + Sec[e + f*x]))])
```

Rule 3780

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*(a + b
*Csc[c + d*x])*Sqrt[(b*(1 + Csc[c + d*x]))/(a + b*Csc[c + d*x])]*Sqrt[-((b*
(1 - Csc[c + d*x]))/(a + b*Csc[c + d*x]))]*EllipticPi[a/(a + b), ArcSin[Rt[
a + b, 2]/Sqrt[a + b*Csc[c + d*x]]], (a - b)/(a + b)])/(d*Rt[a + b, 2]*Cot[
c + d*x]), x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3927

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)/(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_)), x_Symbol] :> Dist[a/c, Int[Sqrt[a + b*Csc[e + f*x]], x], x] +
 Dist[(b*c - a*d)/c, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]])/(c + d*Csc
[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
(EqQ[a^2 - b^2, 0] || EqQ[c^2 - d^2, 0])
```

Rule 3968

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/(c
sc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)), x_Symbol] :> -Simp[(Sqrt[a + b*Csc[e
+ f*x]]*Sqrt[c/(c + d*Csc[e + f*x])]*EllipticE[ArcSin[(c*Cot[e + f*x])/(c +
 d*Csc[e + f*x])], -((b*c - a*d)/(b*c + a*d))])/(d*f*Sqrt[(c*d*(a + b*Csc[e
 + f*x]))/((b*c + a*d)*(c + d*Csc[e + f*x]))]), x] /; FreeQ[{a, b, c, d, e,
```

```
f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && EqQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^{3/2}}{a+a\sec(e+fx)}\,dx = \frac{c\int \sqrt{c+d\sec(e+fx)}\,dx}{a} + (-c+d)\int \frac{\sec(e+fx)\sqrt{c+d\sec(e+fx)}}{a+a\sec(e+fx)}\,dx$$

$$= -\frac{2c\cot(e+fx)\Pi\left(\frac{c}{c+d};\sin^{-1}\left(\frac{\sqrt{c+d}}{\sqrt{c+d\sec(e+fx)}}\right)|\frac{c-d}{c+d}\right)\sqrt{-\frac{d(1-\sec(e+fx))}{c+d\sec(e+fx)}}\sqrt{\frac{d(1+\sec(e+f}{c+d\sec(e+f}}}{a\sqrt{c+d}\,f}$$

Mathematica [B] time = 18.23, size = 810, normalized size = 3.51

$$\frac{(c+d\sec(e+fx))^{3/2}\left(2\sec\left(\frac{1}{2}(e+fx)\right)\left(d\sin\left(\frac{1}{2}(e+fx)\right)-c\sin\left(\frac{1}{2}(e+fx)\right)\right)-2(d-c)\sin(e+fx)\right)\cos^2\left(\frac{e}{2}\right.}{f(d+c\cos(e+fx))(\sec(e+fx)a+a)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*Sec[e + f*x])^(3/2)/(a + a*Sec[e + f*x]),x]
```

```
[Out] (Cos[e/2 + (f*x)/2]^2*(c + d*Sec[e + f*x])^(3/2)*(2*Sec[(e + f*x)/2]*(-(c*S
in[(e + f*x)/2]) + d*Sin[(e + f*x)/2]) - 2*(-c + d)*Sin[e + f*x]))/(f*(d +
c*Cos[e + f*x])*(a + a*Sec[e + f*x])) + (2*Cos[e/2 + (f*x)/2]^2*(c + d*Sec[
e + f*x])^(3/2)*(c^2*Tan[(e + f*x)/2] - d^2*Tan[(e + f*x)/2] - 2*c^2*Tan[(e
 + f*x)/2]^3 + 2*c*d*Tan[(e + f*x)/2]^3 + c^2*Tan[(e + f*x)/2]^5 - 2*c*d*Ta
n[(e + f*x)/2]^5 + d^2*Tan[(e + f*x)/2]^5 - 4*c^2*EllipticPi[-1, ArcSin[Tan
[(e + f*x)/2]], (c - d)/(c + d)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*Sqrt[(c + d -
 c*Tan[(e + f*x)/2]^2 + d*Tan[(e + f*x)/2]^2)/(c + d)] - 4*c^2*EllipticPi[-
1, ArcSin[Tan[(e + f*x)/2]], (c - d)/(c + d)]*Tan[(e + f*x)/2]^2*Sqrt[1 - T
an[(e + f*x)/2]^2]*Sqrt[(c + d - c*Tan[(e + f*x)/2]^2 + d*Tan[(e + f*x)/2]^
2)/(c + d)] + (c^2 - d^2)*EllipticE[ArcSin[Tan[(e + f*x)/2]], (c - d)/(c +
d)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*(1 + Tan[(e + f*x)/2]^2)*Sqrt[(c + d - c*T
an[(e + f*x)/2]^2 + d*Tan[(e + f*x)/2]^2)/(c + d)] + 2*c*(c - d)*EllipticF[
ArcSin[Tan[(e + f*x)/2]], (c - d)/(c + d)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*(1
+ Tan[(e + f*x)/2]^2)*Sqrt[(c + d - c*Tan[(e + f*x)/2]^2 + d*Tan[(e + f*x)/
2]^2)/(c + d)]))/(f*(d + c*Cos[e + f*x])^(3/2)*Sqrt[Sec[e + f*x]]*(a + a*Se
c[e + f*x])*Sqrt[(1 - Tan[(e + f*x)/2]^2)^(-1)]*(-1 + Tan[(e + f*x)/2]^2)*(
1 + Tan[(e + f*x)/2]^2)^(3/2)*Sqrt[(c + d - c*Tan[(e + f*x)/2]^2 + d*Tan[(e
 + f*x)/2]^2)/(1 + Tan[(e + f*x)/2]^2)])
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(d\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{a\sec\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e) + c)^(3/2)/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(d\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e) + c)^(3/2)/(a*sec(f*x + e) + a), x)
```

maple [A] time = 1.92, size = 295, normalized size = 1.28

$$-\frac{\sqrt{\frac{d+c\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\left(1+\cos\left(fx+e\right)\right)^{2}\sqrt{\frac{d+c\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)\left(c+d\right)}}\left(-1+\cos\left(fx+e\right)\right)\left(2\,\mathrm{EllipticF}\left(\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e)),x)
```

```
[Out] -1/a/f*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*(1+cos(f*x+e))^2*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*(-1+cos(f*
x+e))*(2*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((c-d)/(c+d))^(1/2))*c^2-2*c*
EllipticF((-1+cos(f*x+e))/sin(f*x+e),((c-d)/(c+d))^(1/2))*d+EllipticE((-1+c
os(f*x+e))/sin(f*x+e),((c-d)/(c+d))^(1/2))*c^2-EllipticE((-1+cos(f*x+e))/si
n(f*x+e),((c-d)/(c+d))^(1/2))*d^2-4*c^2*EllipticPi((-1+cos(f*x+e))/sin(f*x+
e),-1,((c-d)/(c+d))^(1/2)))/(d+c*cos(f*x+e))/sin(f*x+e)^2
```

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

$$\int \frac{\left(d\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(3/2)/(a+a*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e) + c)^(3/2)/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2}}{a+\frac{a}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x)),x)
```

```
[Out] int((c + d/cos(e + f*x))^(3/2)/(a + a/cos(e + f*x)), x)
```

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

$$\frac{\int \frac{c\sqrt{c+d\sec\left(e+fx\right)}}{\sec\left(e+fx\right)+1}\,dx+\int \frac{d\sqrt{c+d\sec\left(e+fx\right)}\sec\left(e+fx\right)}{\sec\left(e+fx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**(3/2)/(a+a*sec(f*x+e)),x)
```

```
[Out] (Integral(c*sqrt(c + d*sec(e + f*x))/(sec(e + f*x) + 1), x) + Integral(d*sq
rt(c + d*sec(e + f*x))*sec(e + f*x)/(sec(e + f*x) + 1), x))/a
```

3.145 $\int \frac{\sqrt{c+d\sec(e+fx)}}{a+a\sec(e+fx)}\,dx$

Optimal. Leaf size=225

$$-\frac{2\cot(e+fx)\sqrt{-\frac{d(1-\sec(e+fx))}{c+d\sec(e+fx)}}\sqrt{\frac{d(\sec(e+fx)+1)}{c+d\sec(e+fx)}}\,(c+d\sec(e+fx))\Pi\left(\frac{c}{c+d};\sin^{-1}\left(\frac{\sqrt{c+d}}{\sqrt{c+d\sec(e+fx)}}\right)|\frac{c-d}{c+d}\right)}{af\sqrt{c+d}}-\frac{\sqrt{\frac{1}{\sec(e+fx)+}}}{}$$

```
[Out] -2*cot(f*x+e)*EllipticPi((c+d)^(1/2)/(c+d*sec(f*x+e))^(1/2),c/(c+d),((c-d)/
(c+d))^(1/2))*(c+d*sec(f*x+e))*(-d*(1-sec(f*x+e))/(c+d*sec(f*x+e)))^(1/2)*(
d*(1+sec(f*x+e))/(c+d*sec(f*x+e)))^(1/2)/a/f/(c+d)^(1/2)-EllipticE(tan(f*x+
e)/(1+sec(f*x+e)),((c-d)/(c+d))^(1/2))*(1/(1+sec(f*x+e)))^(1/2)*(c+d*sec(f*
x+e))^(1/2)/a/f/((c+d*sec(f*x+e))/(c+d)/(1+sec(f*x+e)))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {3925, 3780, 3968}

$$-\frac{2\cot(e+fx)\sqrt{-\frac{d(1-\sec(e+fx))}{c+d\sec(e+fx)}}\sqrt{\frac{d(\sec(e+fx)+1)}{c+d\sec(e+fx)}}\,(c+d\sec(e+fx))\Pi\left(\frac{c}{c+d};\sin^{-1}\left(\frac{\sqrt{c+d}}{\sqrt{c+d\sec(e+fx)}}\right)|\frac{c-d}{c+d}\right)}{af\sqrt{c+d}}-\frac{\sqrt{\frac{1}{\sec(e+fx)+}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*Sec[e + f*x]]/(a + a*Sec[e + f*x]),x]
```

```
[Out] (-2*Cot[e + f*x]*EllipticPi[c/(c + d), ArcSin[Sqrt[c + d]/Sqrt[c + d*Sec[e
+ f*x]]], (c - d)/(c + d)]*Sqrt[-((d*(1 - Sec[e + f*x]))/(c + d*Sec[e + f*x
]))]*Sqrt[(d*(1 + Sec[e + f*x]))/(c + d*Sec[e + f*x])]*(c + d*Sec[e + f*x])
)/(a*Sqrt[c + d]*f) - (EllipticE[ArcSin[Tan[e + f*x]/(1 + Sec[e + f*x])], (
c - d)/(c + d)]*Sqrt[(1 + Sec[e + f*x])^(-1)]*Sqrt[c + d*Sec[e + f*x]])/(a*
f*Sqrt[(c + d*Sec[e + f*x])/((c + d)*(1 + Sec[e + f*x]))])
```

Rule 3780

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*(a + b
*Csc[c + d*x])*Sqrt[(b*(1 + Csc[c + d*x]))/(a + b*Csc[c + d*x])]*Sqrt[-((b*
(1 - Csc[c + d*x]))/(a + b*Csc[c + d*x]))]*EllipticPi[a/(a + b), ArcSin[Rt[
a + b, 2]/Sqrt[a + b*Csc[c + d*x]]], (a - b)/(a + b)])/(d*Rt[a + b, 2]*Cot[
c + d*x]), x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3925

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_)), x_Symbol] :> Dist[1/c, Int[Sqrt[a + b*Csc[e + f*x]], x], x] - D
ist[d/c, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]])/(c + d*Csc[e + f*x]),
x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && (EqQ[a^2 - b
^2, 0] || EqQ[c^2 - d^2, 0])
```

Rule 3968

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/(c
sc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)), x_Symbol] :> -Simp[(Sqrt[a + b*Csc[e
+ f*x]]*Sqrt[c/(c + d*Csc[e + f*x])]*EllipticE[ArcSin[(c*Cot[e + f*x])/(c +
 d*Csc[e + f*x])], -((b*c - a*d)/(b*c + a*d))])/(d*f*Sqrt[(c*d*(a + b*Csc[e
 + f*x]))/((b*c + a*d)*(c + d*Csc[e + f*x]))]), x] /; FreeQ[{a, b, c, d, e,
```

```
f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && EqQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{\sqrt{c+d\sec(e+fx)}}{a+a\sec(e+fx)}\,dx = \frac{\int \sqrt{c+d\sec(e+fx)}\,dx}{a} - \int \frac{\sec(e+fx)\sqrt{c+d\sec(e+fx)}}{a+a\sec(e+fx)}\,dx$$

$$= -\frac{2\cot(e+fx)\Pi\left(\frac{c}{c+d};\sin^{-1}\left(\frac{\sqrt{c+d}}{\sqrt{c+d\sec(e+fx)}}\right)|\frac{c-d}{c+d}\right)\sqrt{-\frac{d(1-\sec(e+fx))}{c+d\sec(e+fx)}}\sqrt{\frac{d(1+\sec(e+fx))}{c+d\sec(e+fx)}}}{a\sqrt{c+d}\,f}$$

Mathematica [A] time = 8.75, size = 178, normalized size = 0.79

$$-\frac{4\cos^4\left(\frac{1}{2}(e+fx)\right)\sqrt{\frac{1}{\sec(e+fx)+1}}\sqrt{c+d\sec(e+fx)}\left(2(c-d)F\left(\sin^{-1}\left(\tan\left(\frac{1}{2}(e+fx)\right)\right)|\frac{c-d}{c+d}\right)+(c+d)E\left(\sin\right.\right.}{af(c+d)(\cos(e+fx)+1)^2\sqrt{\frac{c\cos(e+fx)+d}{(c+d)(\cos(e+fx)+}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*Sec[e + f*x]]/(a + a*Sec[e + f*x]),x]
```

```
[Out] (-4*Cos[(e + f*x)/2]^4*((c + d)*EllipticE[ArcSin[Tan[(e + f*x)/2]], (c - d)
/(c + d)] + 2*(c - d)*EllipticF[ArcSin[Tan[(e + f*x)/2]], (c - d)/(c + d)]
- 4*c*EllipticPi[-1, ArcSin[Tan[(e + f*x)/2]], (c - d)/(c + d)])*Sqrt[(1 +
Sec[e + f*x])^(-1)]*Sqrt[c + d*Sec[e + f*x]])/(a*(c + d)*f*(1 + Cos[e + f*x
])^2*Sqrt[(d + c*Cos[e + f*x])/((c + d)*(1 + Cos[e + f*x]))])
```

fricas [F] time = 22.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)+c}}{a\sec\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e) + c)/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\sqrt{d\sec\left(fx+e\right)+c}}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(d*sec(f*x + e) + c)/(a*sec(f*x + e) + a), x)
```

maple [A] time = 1.98, size = 285, normalized size = 1.27

$$-\frac{\sqrt{\frac{d+c\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sqrt{\frac{d+c\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)(c+d)}}\left(1+\cos\left(fx+e\right)\right)^2\left(2\,\text{EllipticF}\left(\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)},\sqrt{\frac{c-d}{c+d}}\right)c-2\,\text{E}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e)),x)
```

```
[Out] -1/a/f*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*(1+cos(f*x+e))^2*(2*Ellipti
cF((-1+cos(f*x+e))/sin(f*x+e),((c-d)/(c+d))^(1/2))*c-2*EllipticF((-1+cos(f*
x+e))/sin(f*x+e),((c-d)/(c+d))^(1/2))*d+c*EllipticE((-1+cos(f*x+e))/sin(f*x
+e),((c-d)/(c+d))^(1/2))+d*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((c-d)/(c+d
))^(1/2))-4*c*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((c-d)/(c+d))^(1/2))
)*(-1+cos(f*x+e))/(d+c*cos(f*x+e))/sin(f*x+e)^2
```

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

$$\int \frac{\sqrt{d\sec\left(fx+e\right)+c}}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(d*sec(f*x + e) + c)/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}}{a+\frac{a}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x)),x)
```

```
[Out] int((c + d/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x)), x)
```

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

$$\frac{\int \frac{\sqrt{c+d\sec\left(e+fx\right)}}{\sec\left(e+fx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**(1/2)/(a+a*sec(f*x+e)),x)
```

```
[Out] Integral(sqrt(c + d*sec(e + f*x))/(sec(e + f*x) + 1), x)/a
```

3.146 $\int \frac{1}{(a+a\sec(e+fx))\sqrt{c+d\sec(e+fx)}}\,dx$

Optimal. Leaf size=319

$$\frac{2\sqrt{c+d}\cot(e+fx)\sqrt{\frac{d(1-\sec(e+fx))}{c+d}}\sqrt{-\frac{d(\sec(e+fx)+1)}{c-d}}F\left(\sin^{-1}\left(\frac{\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}}\right)|\frac{c+d}{c-d}\right)}{af(c-d)}-\frac{2\sqrt{c+d}\cot(e+fx)\sqrt{\frac{d(1-s}{}}}{}$$

```
[Out] 2*cot(f*x+e)*EllipticF((c+d*sec(f*x+e))^(1/2)/(c+d)^(1/2),((c+d)/(c-d))^(1/
2))*(c+d)^(1/2)*(d*(1-sec(f*x+e))/(c+d))^(1/2)*(-d*(1+sec(f*x+e))/(c-d))^(1
/2)/a/(c-d)/f-2*cot(f*x+e)*EllipticPi((c+d*sec(f*x+e))^(1/2)/(c+d)^(1/2),(c
+d)/c,((c+d)/(c-d))^(1/2))*(c+d)^(1/2)*(d*(1-sec(f*x+e))/(c+d))^(1/2)*(-d*(
1+sec(f*x+e))/(c-d))^(1/2)/a/c/f-EllipticE(tan(f*x+e)/(1+sec(f*x+e)),((c-d)
/(c+d))^(1/2))*(1/(1+sec(f*x+e)))^(1/2)*(c+d*sec(f*x+e))^(1/2)/a/(c-d)/f/((
c+d*sec(f*x+e))/(c+d)/(1+sec(f*x+e)))^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 319, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {3929, 3921, 3784, 3832, 3968}

$$\frac{2\sqrt{c+d}\cot(e+fx)\sqrt{\frac{d(1-\sec(e+fx))}{c+d}}\sqrt{-\frac{d(\sec(e+fx)+1)}{c-d}}F\left(\sin^{-1}\left(\frac{\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}}\right)|\frac{c+d}{c-d}\right)}{af(c-d)}-\frac{2\sqrt{c+d}\cot(e+fx)\sqrt{\frac{d(1-s}{}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])*Sqrt[c + d*Sec[e + f*x]]),x]
```

```
[Out] (2*Sqrt[c + d]*Cot[e + f*x]*EllipticF[ArcSin[Sqrt[c + d*Sec[e + f*x]]/Sqrt[
c + d]], (c + d)/(c - d)]*Sqrt[(d*(1 - Sec[e + f*x]))/(c + d)]*Sqrt[-((d*(1
 + Sec[e + f*x]))/(c - d))])/(a*(c - d)*f) - (2*Sqrt[c + d]*Cot[e + f*x]*El
lipticPi[(c + d)/c, ArcSin[Sqrt[c + d*Sec[e + f*x]]/Sqrt[c + d]], (c + d)/(
c - d)]*Sqrt[(d*(1 - Sec[e + f*x]))/(c + d)]*Sqrt[-((d*(1 + Sec[e + f*x]))/
(c - d))])/(a*c*f) - (EllipticE[ArcSin[Tan[e + f*x]/(1 + Sec[e + f*x])], (c
 - d)/(c + d)]*Sqrt[(1 + Sec[e + f*x])^(-1)]*Sqrt[c + d*Sec[e + f*x]])/(a*(
c - d)*f*Sqrt[(c + d*Sec[e + f*x])/((c + d)*(1 + Sec[e + f*x]))])
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3921

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] + D
```

```
ist[d, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c,
 d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

Rule 3929

```
Int[1/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*
(d_.) + (c_))), x_Symbol] :> Dist[1/(c*(b*c - a*d)), Int[(b*c - a*d - b*d*C
sc[e + f*x])/Sqrt[a + b*Csc[e + f*x]], x], x] + Dist[d^2/(c*(b*c - a*d)), I
nt[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]])/(c + d*Csc[e + f*x]), x], x] /;
FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && (EqQ[a^2 - b^2, 0] ||
EqQ[c^2 - d^2, 0])
```

Rule 3968

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/(c
sc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)), x_Symbol] :> -Simp[(Sqrt[a + b*Csc[e
+ f*x]]*Sqrt[c/(c + d*Csc[e + f*x])]*EllipticE[ArcSin[(c*Cot[e + f*x])/(c +
 d*Csc[e + f*x])], -((b*c - a*d)/(b*c + a*d))])/(d*f*Sqrt[(c*d*(a + b*Csc[e
 + f*x]))/((b*c + a*d)*(c + d*Csc[e + f*x]))]), x] /; FreeQ[{a, b, c, d, e,
 f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && EqQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))\sqrt{c+d\sec(e+fx)}}\,dx = -\frac{\int \frac{-ac+ad-ad\sec(e+fx)}{\sqrt{c+d\sec(e+fx)}}\,dx}{a^2(c-d)} + \frac{a\int \frac{\sec(e+fx)\sqrt{c+d\sec(e+fx)}}{a+a\sec(e+fx)}\,dx}{-ac+ad}$$

$$= -\frac{E\left(\sin^{-1}\left(\frac{\tan(e+fx)}{1+\sec(e+fx)}\right)|\frac{c-d}{c+d}\right)\sqrt{\frac{1}{1+\sec(e+fx)}}\sqrt{c+d\sec(e+fx)}}{a(c-d)f\sqrt{\frac{c+d\sec(e+fx)}{(c+d)(1+\sec(e+fx))}}} + \frac{\int}{}$$

$$= \frac{2\sqrt{c+d}\,\cot(e+fx)F\left(\sin^{-1}\left(\frac{\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}}\right)|\frac{c+d}{c-d}\right)\sqrt{\frac{d(1-\sec(e+fx))}{c+d}}}{a(c-d)f}$$

Mathematica [A] time = 12.71, size = 187, normalized size = 0.59

$$\frac{2\cos^2\left(\frac{1}{2}(e+fx)\right)\sqrt{\frac{\cos(e+fx)}{\cos(e+fx)+1}}\sec(e+fx)\sqrt{\frac{c\cos(e+fx)+d}{(c+d)(\cos(e+fx)+1)}}\left(2(c-2d)F\left(\sin^{-1}\left(\tan\left(\frac{1}{2}(e+fx)\right)\right)|\frac{c-d}{c+d}\right)+(c+d\right.}{af(d-c)\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*Sec[e + f*x])*Sqrt[c + d*Sec[e + f*x]]),x]
```

```
[Out] (2*Cos[(e + f*x)/2]^2*Sqrt[Cos[e + f*x]/(1 + Cos[e + f*x])]*Sqrt[(d + c*Cos
[e + f*x])/((c + d)*(1 + Cos[e + f*x]))]*((c + d)*EllipticE[ArcSin[Tan[(e +
 f*x)/2]], (c - d)/(c + d)] + 2*(c - 2*d)*EllipticF[ArcSin[Tan[(e + f*x)/2]
], (c - d)/(c + d)] + 4*(-c + d)*EllipticPi[-1, ArcSin[Tan[(e + f*x)/2]], (
c - d)/(c + d)])*Sec[e + f*x])/(a*(-c + d)*f*Sqrt[c + d*Sec[e + f*x]])
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)+c}}{ad\sec\left(fx+e\right)^2+ac+(ac+ad)\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))/(c+d*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(d*sec(f*x + e) + c)/(a*d*sec(f*x + e)^2 + a*c + (a*c + a*d)*s
ec(f*x + e)), x)
```

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

$$\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))/(c+d*sec(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c)), x)
```

maple [A] time = 2.10, size = 327, normalized size = 1.03

$$-\frac{\sqrt{\frac{d+c\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sqrt{\frac{d+c\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)\left(c+d\right)}}\left(1+\cos\left(fx+e\right)\right)^{2}\left(2\,\mathrm{EllipticF}\left(\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)},\sqrt{\frac{c-d}{c+d}}\right)c-4\,\mathrm{E}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))/(c+d*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/a/f*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*(1+cos(f*x+e))^2*(2*Ellipti
cF((-1+cos(f*x+e))/sin(f*x+e),((c-d)/(c+d))^(1/2))*c-4*EllipticF((-1+cos(f*
x+e))/sin(f*x+e),((c-d)/(c+d))^(1/2))*d+c*EllipticE((-1+cos(f*x+e))/sin(f*x
+e),((c-d)/(c+d))^(1/2))+d*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((c-d)/(c+d
))^(1/2))-4*c*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((c-d)/(c+d))^(1/2))
+4*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((c-d)/(c+d))^(1/2))*d)*(-1+cos
(f*x+e))/(d+c*cos(f*x+e))/sin(f*x+e)^2/(c-d)
```

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

$$\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))/(c+d*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((a*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c)), x)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)\,\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))*(c + d/cos(e + f*x))^(1/2)),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))*(c + d/cos(e + f*x))^(1/2)), x)
```

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

$$\frac{\int \frac{1}{\sqrt{c+d\sec\left(e+fx\right)}\sec\left(e+fx\right)+\sqrt{c+d\sec\left(e+fx\right)}}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))/(c+d*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(c + d*sec(e + f*x))*sec(e + f*x) + sqrt(c + d*sec(e + f*x)
)), x)/a
```

3.147 $\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^4\,dx$

Optimal. Leaf size=271

$$\frac{2a^{3/2}c^4\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{2d^4\tan(e+fx)(a-a\sec(e+fx))^3}{7a^2f\sqrt{a\sec(e+fx)+a}}-\frac{2d^2\left(6c^2+8cd+3d^2\right)\tan(e}{3f\sqrt{a\sec(e+}}$$

```
[Out] 2*a*d*(2*c+d)*(2*c^2+2*c*d+d^2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2/3*d^2
*(6*c^2+8*c*d+3*d^2)*(a-a*sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2
/5*d^3*(4*c+3*d)*(a-a*sec(f*x+e))^2*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)-2
/7*d^4*(a-a*sec(f*x+e))^3*tan(f*x+e)/a^2/f/(a+a*sec(f*x+e))^(1/2)+2*a^(3/2)
*c^4*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/f/(a-a*sec(f*x+e))^
(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {3940, 88, 63, 206}

$$\frac{2a^{3/2}c^4\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{2d^4\tan(e+fx)(a-a\sec(e+fx))^3}{7a^2f\sqrt{a\sec(e+fx)+a}}-\frac{2d^2\left(6c^2+8cd+3d^2\right)\tan(e}{3f\sqrt{a\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^4,x]
```

```
[Out] (2*a*d*(2*c + d)*(2*c^2 + 2*c*d + d^2)*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e +
f*x]]) + (2*a^(3/2)*c^4*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f
*x])/(f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (2*d^2*(6*c^2
+ 8*c*d + 3*d^2)*(a - a*Sec[e + f*x])*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec[e +
 f*x]]) + (2*d^3*(4*c + 3*d)*(a - a*Sec[e + f*x])^2*Tan[e + f*x])/(5*a*f*Sq
rt[a + a*Sec[e + f*x]]) - (2*d^4*(a - a*Sec[e + f*x])^3*Tan[e + f*x])/(7*a^
2*f*Sqrt[a + a*Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
```

```
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^4\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\frac{(c+dx)^4}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{d(2c+d)\left(2c^2+2cd+d^2\right)}{\sqrt{a-ax}}+\frac{c^4}{x\sqrt{a-ax}}-\frac{d^2\left(6c^2+\right.}{}\right.\right.}{f\sqrt{a-a\sec(e+fx)}}$$

$$= \frac{2ad(2c+d)\left(2c^2+2cd+d^2\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2d^2\left(6c^2+8cd+3d^2\right.}{3f\sqrt{a}}$$

$$= \frac{2ad(2c+d)\left(2c^2+2cd+d^2\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2d^2\left(6c^2+8cd+3d^2\right.}{3f\sqrt{a}}$$

$$= \frac{2ad(2c+d)\left(2c^2+2cd+d^2\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^{3/2}c^4\tanh^{-1}\left(\frac{\sqrt{a-a}}{}\right.}{f\sqrt{a-a\sec(e+fx)}}$$

Mathematica [C] time = 14.30, size = 587, normalized size = 2.17

$$\frac{\cos^4(e+fx)\sec\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\,(c+d\sec(e+fx))^4\left(\frac{4}{105}\sec(e+fx)\left(105c^2d^2\sin\left(\frac{1}{2}(e+fx)\right)+\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^4,x]
```

```
[Out] (Cos[e + f*x]^4*Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])]*(c + d*Sec[e +
f*x])^4*((8*d*(105*c^3 + 105*c^2*d + 56*c*d^2 + 12*d^3)*Sin[(e + f*x)/2])/1
05 + (2*d^4*Sec[e + f*x]^3*Sin[(e + f*x)/2])/7 + (4*Sec[e + f*x]^2*(14*c*d^
3*Sin[(e + f*x)/2] + 3*d^4*Sin[(e + f*x)/2]))/35 + (4*Sec[e + f*x]*(105*c^2
*d^2*Sin[(e + f*x)/2] + 56*c*d^3*Sin[(e + f*x)/2] + 12*d^4*Sin[(e + f*x)/2]
))/105))/(f*(d + c*Cos[e + f*x])^4) - (8*(-3 - 2*Sqrt[2])*c^4*Cos[(e + f*x)
/4]^4*Sqrt[(7 - 5*Sqrt[2] + (10 - 7*Sqrt[2])*Cos[(e + f*x)/2])/(1 + Cos[(e
+ f*x)/2])]*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)/2])/(1 + Cos[
(e + f*x)/2])]*(1 - Sqrt[2] + (-2 + Sqrt[2])*Cos[(e + f*x)/2])*Cos[e + f*x]
^3*(EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]
] - 2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]
]], 17 - 12*Sqrt[2]])*Sqrt[(-1 - Sqrt[2] + (2 + Sqrt[2])*Cos[(e + f*x)/2])*
Sec[(e + f*x)/4]^2]*Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])]*(c + d*Sec[
e + f*x])^4*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x)/4]^2])/(f*(d + c*Cos[e + f*x
])^4)
```

fricas [A] time = 0.51, size = 472, normalized size = 1.74

$$\left[\frac{105\left(c^4\cos\left(fx+e\right)^4+c^4\cos\left(fx+e\right)^3\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^4*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/105*(105*(c^4*cos(f*x + e)^4 + c^4*cos(f*x + e)^3)*sqrt(-a)*log((2*a*cos
(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(15*d^4 + 4*(
105*c^3*d + 105*c^2*d^2 + 56*c*d^3 + 12*d^4)*cos(f*x + e)^3 + 2*(105*c^2*d^
2 + 56*c*d^3 + 12*d^4)*cos(f*x + e)^2 + 6*(14*c*d^3 + 3*d^4)*cos(f*x + e))*
sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^4 + f
*cos(f*x + e)^3), -2/105*(105*(c^4*cos(f*x + e)^4 + c^4*cos(f*x + e)^3)*sqr
t(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*s
in(f*x + e))) - (15*d^4 + 4*(105*c^3*d + 105*c^2*d^2 + 56*c*d^3 + 12*d^4)*c
os(f*x + e)^3 + 2*(105*c^2*d^2 + 56*c*d^3 + 12*d^4)*cos(f*x + e)^2 + 6*(14*
c*d^3 + 3*d^4)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*
x + e))/(f*cos(f*x + e)^4 + f*cos(f*x + e)^3)]
```

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((c+d*sec(f*x+e))^4*(a+a*sec(f*x+e))^(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)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)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/
2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check s
ign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unab
le to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-
4*pi/x/2)2*(2*(((-1/216090000*(27783000*sqrt(2)*a^4*d^4*sign(cos(f*x+exp(1)
))+201684000*sqrt(2)*a^4*c*d^3*sign(cos(f*x+exp(1)))+216090000*sqrt(2)*a^4*
c^2*d^2*sign(cos(f*x+exp(1)))+432180000*sqrt(2)*a^4*c^3*d*sign(cos(f*x+exp(
1))))*tan(1/2*(f*x+exp(1)))^2-1/147000*(-102900*sqrt(2)*a^4*d^4*sign(cos(f*
x+exp(1)))-333200*sqrt(2)*a^4*c*d^3*sign(cos(f*x+exp(1)))-735000*sqrt(2)*a^
4*c^2*d^2*sign(cos(f*x+exp(1)))-882000*sqrt(2)*a^4*c^3*d*sign(cos(f*x+exp(1
```

```
)))))*tan(1/2*(f*x+exp(1)))^2+1/3087000*(-1543500*sqrt(2)*a^4*d^4*sign(cos(
f*x+exp(1)))-10290000*sqrt(2)*a^4*c*d^3*sign(cos(f*x+exp(1)))-21609000*sqrt
(2)*a^4*c^2*d^2*sign(cos(f*x+exp(1)))-18522000*sqrt(2)*a^4*c^3*d*sign(cos(f
*x+exp(1)))))*tan(1/2*(f*x+exp(1)))^2+1/14700*(7350*sqrt(2)*a^4*d^4*sign(co
s(f*x+exp(1)))+29400*sqrt(2)*a^4*c*d^3*sign(cos(f*x+exp(1)))+44100*sqrt(2)*
a^4*c^2*d^2*sign(cos(f*x+exp(1)))+29400*sqrt(2)*a^4*c^3*d*sign(cos(f*x+exp(
1))))))/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^3*
tan(1/2*(f*x+exp(1)))-1/2*a*sqrt(-a)*c^4*sign(cos(f*x+exp(1)))*ln(abs(2*(sq
rt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2
)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f
*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 2.13, size = 546, normalized size = 2.01

$$\frac{\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\left(105\sqrt{2}\,\left(\cos^3\left(fx+e\right)\right)\sin\left(fx+e\right)\left(-\frac{2\cos(fx+e)}{1+\cos(fx+e)}\right)^{\frac{7}{2}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)c^4+315\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^4*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/840/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(105*2^(1/2)*cos(f*x+e)^3*sin(f
*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^4+315*2^(1/2)*cos(f*x+e)^
2*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(f*x+e
)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^4+315*2^(1/2)*cos(
f*x+e)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^4+105*2^(1/2)
*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^4*sin(f*x+e)-6720*cos(f*x+e)^4
*c^3*d-6720*cos(f*x+e)^4*c^2*d^2-3584*cos(f*x+e)^4*c*d^3-768*cos(f*x+e)^4*d
^4+6720*cos(f*x+e)^3*c^3*d+3360*cos(f*x+e)^3*c^2*d^2+1792*cos(f*x+e)^3*c*d^
3+384*cos(f*x+e)^3*d^4+3360*cos(f*x+e)^2*c^2*d^2+448*cos(f*x+e)^2*c*d^3+96*
cos(f*x+e)^2*d^4+1344*cos(f*x+e)*c*d^3+48*cos(f*x+e)*d^4+240*d^4)/cos(f*x+e
)^3/sin(f*x+e)
```

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((c+d*sec(f*x+e))^4*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^4,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^4, x)
```

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

$$\int \sqrt{a\left(\sec\left(e+fx\right)+1\right)}\,\left(c+d\sec\left(e+fx\right)\right)^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**4*(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*(c + d*sec(e + f*x))**4, x)
```

3.148 $\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^3\,dx$

Optimal. Leaf size=205

$$\frac{2a^{3/2}c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2ad\left(3c^2+3cd+d^2\right)\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}-\frac{2d^2(3c+2d)\tan(e+fx)(a-a\sec}{3f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*a*d*(3*c^2+3*c*d+d^2)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2/3*d^2*(3*c+2*
d)*(a-a*sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/5*d^3*(a-a*sec(f*
x+e))^2*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)+2*a^(3/2)*c^3*arctanh((a-a*se
c(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e
))^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {3940, 88, 63, 206}

$$\frac{2a^{3/2}c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2ad\left(3c^2+3cd+d^2\right)\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}-\frac{2d^2(3c+2d)\tan(e+fx)(a-a\sec}{3f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (2*a*d*(3*c^2 + 3*c*d + d^2)*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (
2*a^(3/2)*c^3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(f*Sq
rt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (2*d^2*(3*c + 2*d)*(a -
a*Sec[e + f*x])*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec[e + f*x]]) + (2*d^3*(a -
a*Sec[e + f*x])^2*Tan[e + f*x])/(5*a*f*Sqrt[a + a*Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

```
&& IntegerQ[m - 1/2]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^3\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(c+dx)^3}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{d\left(3c^2+3cd+d^2\right)}{\sqrt{a-ax}}+\frac{c^3}{x\sqrt{a-ax}}-\frac{d^2(3c+2d)\cdot}{a}\right.\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec}}$$

$$= \frac{2ad\left(3c^2+3cd+d^2\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2d^2(3c+2d)(a-a\sec(e+}{3f\sqrt{a+a\sec(e}}$$

$$= \frac{2ad\left(3c^2+3cd+d^2\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2d^2(3c+2d)(a-a\sec(e+}{3f\sqrt{a+a\sec(e}}$$

$$= \frac{2ad\left(3c^2+3cd+d^2\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^{3/2}c^3\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+}}{\sqrt{a}}\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\cdot}}$$

Mathematica [C] time = 14.19, size = 517, normalized size = 2.52

$$\frac{\cos^3(e+fx)\sec\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\,(c+d\sec(e+fx))^3\left(\frac{2}{15}d\left(45c^2+30cd+8d^2\right)\sin\left(\frac{1}{2}(e+fx)\right.\right.}{f(c\cos(e+fx)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (Cos[e + f*x]^3*Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])]*(c + d*Sec[e +
f*x])^3*((2*d*(45*c^2 + 30*c*d + 8*d^2)*Sin[(e + f*x)/2])/15 + (2*d^3*Sec[e
 + f*x]^2*Sin[(e + f*x)/2])/5 + (2*Sec[e + f*x]*(15*c*d^2*Sin[(e + f*x)/2]
+ 4*d^3*Sin[(e + f*x)/2]))/15))/(f*(d + c*Cos[e + f*x])^3) - (8*(-3 - 2*Sqr
t[2])*c^3*Cos[(e + f*x)/4]^4*Sqrt[(7 - 5*Sqrt[2] + (10 - 7*Sqrt[2])*Cos[(e
+ f*x)/2])/(1 + Cos[(e + f*x)/2])]*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[
(e + f*x)/2])/(1 + Cos[(e + f*x)/2])]*(1 - Sqrt[2] + (-2 + Sqrt[2])*Cos[(e
+ f*x)/2])*Cos[e + f*x]^2*(EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqr
t[2]]], 17 - 12*Sqrt[2]] - 2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x
)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]])*Sqrt[(-1 - Sqrt[2] + (2 + Sqrt
[2])*Cos[(e + f*x)/2])*Sec[(e + f*x)/4]^2]*Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec
[e + f*x])]*(c + d*Sec[e + f*x])^3*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x)/4]^2]
)/(f*(d + c*Cos[e + f*x])^3)
```

fricas [A] time = 0.48, size = 392, normalized size = 1.91

$$\left[\frac{15\left(c^3\cos\left(fx+e\right)^3+c^3\cos\left(fx+e\right)^2\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right.}{15\left(f\cos\left(fx+e\right)^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^3*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/15*(15*(c^3*cos(f*x + e)^3 + c^3*cos(f*x + e)^2)*sqrt(-a)*log((2*a*cos(f
*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)
*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(3*d^3 + (45*c^
2*d + 30*c*d^2 + 8*d^3)*cos(f*x + e)^2 + (15*c*d^2 + 4*d^3)*cos(f*x + e))*s
qrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3 + f*
cos(f*x + e)^2), -2/15*(15*(c^3*cos(f*x + e)^3 + c^3*cos(f*x + e)^2)*sqrt(a
)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(
f*x + e))) - (3*d^3 + (45*c^2*d + 30*c*d^2 + 8*d^3)*cos(f*x + e)^2 + (15*c*
d^2 + 4*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x
+ e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^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((c+d*sec(f*x+e))^3*(a+a*sec(f*x+e))^(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)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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)2*(2*((1/450*(-300*a^3*d^3*sign(cos(f*x+exp(1)))-1800*a^3*c*d^2*sign(cos(f
*x+exp(1)))-2700*a^3*c^2*d*sign(cos(f*x+exp(1))))/sqrt(2)+1/450*(210*a^3*d^
3*sign(cos(f*x+exp(1)))+450*a^3*c*d^2*sign(cos(f*x+exp(1)))+1350*a^3*c^2*d*
sign(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2/sqrt(2))*tan(1/2*(f*x+exp(1)
))^2+1/450*(450*a^3*d^3*sign(cos(f*x+exp(1)))+1350*a^3*c*d^2*sign(cos(f*x+e
xp(1)))+1350*a^3*c^2*d*sign(cos(f*x+exp(1))))/sqrt(2))/sqrt(-a*tan(1/2*(f*x
+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^2*tan(1/2*(f*x+exp(1)))-1/2*a
*sqrt(-a)*c^3*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))
^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-
a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*ab
s(a)-6*a))/abs(a))/f
```

maple [B] time = 1.96, size = 389, normalized size = 1.90

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(15\left(\cos^{2}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{5}{2}}c^{3}+30\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^3*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/60/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(15*cos(f*x+e)^2*sin(f*x+e)*2^(
1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)
*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*c^3+30*cos(f*x+e)*sin(f*x+e)
*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*
x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*c^3+15*arctanh(1/2*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+
e)/(1+cos(f*x+e)))^(5/2)*2^(1/2)*c^3*sin(f*x+e)+360*cos(f*x+e)^3*c^2*d+240*
cos(f*x+e)^3*c*d^2+64*cos(f*x+e)^3*d^3-360*cos(f*x+e)^2*c^2*d-120*cos(f*x+e
)^2*c*d^2-32*cos(f*x+e)^2*d^3-120*cos(f*x+e)*c*d^2-8*cos(f*x+e)*d^3-24*d^3)
/cos(f*x+e)^2/sin(f*x+e)
```

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((c+d*sec(f*x+e))^3*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^3,x)
[Out] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^3, x)
```

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

$$\int \sqrt{a \left(\sec{\left(e + f x \right)} + 1\right)} \left(c + d \sec{\left(e + f x \right)}\right)^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**3*(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*(c + d*sec(e + f*x))**3, x)
```

3.149 $\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2\,dx$

Optimal. Leaf size=144

$$\frac{2a^{3/2}c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2ad(2c+d)\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}-\frac{2d^2\tan(e+fx)(a-a\sec(e+fx))}{3f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*a*d*(2*c+d)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2/3*d^2*(a-a*sec(f*x+e))*
tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2*a^(3/2)*c^2*arctanh((a-a*sec(f*x+e))^
(1/2)/a^(1/2))*tan(f*x+e)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {3940, 88, 63, 206}

$$\frac{2a^{3/2}c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2ad(2c+d)\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}-\frac{2d^2\tan(e+fx)(a-a\sec(e+fx))}{3f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (2*a*d*(2*c + d)*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^(3/2)*c^
2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(f*Sqrt[a - a*Sec
[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (2*d^2*(a - a*Sec[e + f*x])*Tan[e +
f*x])/(3*f*Sqrt[a + a*Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(c+dx)^2}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{d(2c+d)}{\sqrt{a-ax}}+\frac{c^2}{x\sqrt{a-ax}}-\frac{d^2\sqrt{a-ax}}{a}\right)dx, x\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2ad(2c+d)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2d^2(a-a\sec(e+fx))\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2ad(2c+d)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2d^2(a-a\sec(e+fx))\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2ad(2c+d)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^{3/2}c^2\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e}}$$

Mathematica [C] time = 6.59, size = 444, normalized size = 3.08

$$\sqrt{\frac{1}{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}}\sqrt{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}\csc^3\left(\frac{1}{2}(e+fx)\right)\sec\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\,(c+d\sec(e+$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (Csc[(e + f*x)/2]^3*Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])]*(c + d*Sec[
e + f*x])^2*Sqrt[(1 - 2*Sin[(e + f*x)/2]^2)^(-1)]*Sqrt[1 - 2*Sin[(e + f*x)/
2]^2]*(256*HypergeometricPFQ[{3/2, 2, 7/2}, {1, 9/2}, 2*Sin[(e + f*x)/2]^2]
*Sin[(e + f*x)/2]^6*(c + d - 2*c*Sin[(e + f*x)/2]^2)^2 + 1024*Hypergeometri
c2F1[3/2, 7/2, 9/2, 2*Sin[(e + f*x)/2]^2]*Sin[(e + f*x)/2]^6*(d^2 + c*d*(2
- 3*Sin[(e + f*x)/2]^2) + c^2*(1 - 3*Sin[(e + f*x)/2]^2 + 2*Sin[(e + f*x)/2
]^4)) - (7*Sqrt[2]*(-3*ArcSin[Sqrt[2]*Sqrt[Sin[(e + f*x)/2]^2]] + Sqrt[2]*S
qrt[Sin[(e + f*x)/2]^2]*Sqrt[1 - 2*Sin[(e + f*x)/2]^2]*(3 + 4*Sin[(e + f*x)
/2]^2))*(15*d^2 + 10*c*d*(3 - 2*Sin[(e + f*x)/2]^2) + c^2*(15 - 20*Sin[(e +
 f*x)/2]^2 + 12*Sin[(e + f*x)/2]^4)))/Sqrt[Sin[(e + f*x)/2]^2]))/(672*f*(d
+ c*Cos[e + f*x])^2*Sec[e + f*x]^(5/2))
```

fricas [A] time = 0.48, size = 320, normalized size = 2.22

$$\left[\frac{3\left(c^2\cos\left(fx+e\right)^2+c^2\cos\left(fx+e\right)\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)+}{3\left(f\cos\left(fx+e\right)^2+f\cos\left(fx+e\right)\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^2*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(c^2*cos(f*x + e)^2 + c^2*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x +
 e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(d^2 + 2*(3*c*d + d
^2)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*
cos(f*x + e)^2 + f*cos(f*x + e)), -2/3*(3*(c^2*cos(f*x + e)^2 + c^2*cos(f*x
 + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/
(sqrt(a)*sin(f*x + e))) - (d^2 + 2*(3*c*d + d^2)*cos(f*x + e))*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^2 + f*cos(f*x + e
))]
```

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((c+d*sec(f*x+e))^2*(a+a*sec(f*x+e))^(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)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)2*(2/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a
)*(-1/324*(54*sqrt(2)*a^2*d^2*sign(cos(f*x+exp(1)))+324*sqrt(2)*a^2*c*d*sig
n(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2-1/18*(-9*sqrt(2)*a^2*d^2*sign(c
os(f*x+exp(1)))-18*sqrt(2)*a^2*c*d*sign(cos(f*x+exp(1)))))*tan(1/2*(f*x+exp
(1)))-1/2*a*sqrt(-a)*c^2*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f
*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/ab
s(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4
*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [A] time = 1.74, size = 248, normalized size = 1.72

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(3\sin\left(fx+e\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{3}{2}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\cos\left(fx+e\right)\sqrt{2}\,c^{2}+3\left(-\frac{2\cos}{1+\cos}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^2*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/6/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(3*sin(f*x+e)*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(3/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+
e)/cos(f*x+e)*2^(1/2))*cos(f*x+e)*2^(1/2)*c^2+3*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(3/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f
*x+e)*2^(1/2))*2^(1/2)*c^2*sin(f*x+e)-24*cos(f*x+e)^2*c*d-8*cos(f*x+e)^2*d^
2+24*cos(f*x+e)*c*d+4*cos(f*x+e)*d^2+4*d^2)/sin(f*x+e)/cos(f*x+e)
```

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((c+d*sec(f*x+e))^2*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^2, x)
```

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

$$\int \sqrt{a \left(\sec{\left(e + f x \right)} + 1\right)} \left(c + d \sec{\left(e + f x \right)}\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**2*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*(c + d*sec(e + f*x))**2, x)
```

3.150 $\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))\,dx$

Optimal. Leaf size=66

$$\frac{2\sqrt{a}\,c\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2ad\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/f+2*a*d*tan(f
*x+e)/f/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 66, 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 = {3915, 3774, 203, 3792}

$$\frac{2\sqrt{a}\,c\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2ad\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*Sqrt[a]*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f + (
2*a*d*Tan[e + f*x])/(f*Sqrt[a + a*Sec[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 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3792

```
Int[csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*b*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e + f*x]]), x] /; Free
Q[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3915

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_)), x_Symbol] :> Dist[c, Int[Sqrt[a + b*Csc[e + f*x]], x], x] + Dis
t[d, Int[Sqrt[a + b*Csc[e + f*x]]*Csc[e + f*x], x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))\,dx = c\int \sqrt{a+a\sec(e+fx)}\,dx + d\int \sec(e+fx)\sqrt{a+a\sec(e+fx)}$$

$$= \frac{2ad\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{(2ac)\,\text{Subst}\left(\int \frac{1}{a+x^2}\,dx, x, -\frac{a\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}$$

$$= \frac{2\sqrt{a}\,c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} + \frac{2ad\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}$$

Mathematica [A] time = 0.31, size = 76, normalized size = 1.15

$$\frac{\sec\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(\sqrt{2}c\sin^{-1}\left(\sqrt{2}\sin\left(\frac{1}{2}(e+fx)\right)\right)\sqrt{\cos(e+fx)}+2d\sin\left(\frac{1}{2}(e+fx)\right)\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x]),x]
```

```
[Out] (Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])]*(Sqrt[2]*c*ArcSin[Sqrt[2]*Sin[
(e + f*x)/2]]*Sqrt[Cos[e + f*x]] + 2*d*Sin[(e + f*x)/2]))/f
```

fricas [A] time = 0.50, size = 235, normalized size = 3.56

$$\left[\frac{\left(c\cos\left(fx+e\right)+c\right)\sqrt{-a}\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)+2\,d\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}}{f\cos\left(fx+e\right)+f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))*(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [((c*cos(f*x + e) + c)*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e
) - a)/(cos(f*x + e) + 1)) + 2*d*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*si
n(f*x + e))/(f*cos(f*x + e) + f), -2*((c*cos(f*x + e) + c)*sqrt(a)*arctan(s
qrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))
 - d*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)
+ f)]
```

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((c+d*sec(f*x+e))*(a+a*sec(f*x+e))^(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: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
```

```
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (2*pi/x/2)>(-2*pi/x/2)2*(-1/2*a*sqrt(-a)*c*sign(cos(f*x+exp(1)))*ln(abs(2
*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sq
rt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/
2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a)+sqrt(2)*a*d*sqrt(-a*tan(1/
2*(f*x+exp(1)))^2+a)*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1)))/(-a*tan(1/
2*(f*x+exp(1)))^2+a))/f
```

maple [B] time = 1.55, size = 118, normalized size = 1.79

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sqrt{2}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)c\sin\left(fx+e\right)+2d\cos\left(fx+e\right)-2d\right)}{f\sin\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1
/2)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos
(f*x+e)*2^(1/2))*c*sin(f*x+e)+2*d*cos(f*x+e)-2*d)/sin(f*x+e)
```

maxima [B] time = 0.59, size = 147, normalized size = 2.23

$$\frac{\sqrt{a}\,c\arctan\left(\left(\cos\left(2\,fx+2\,e\right)^{2}+\sin\left(2\,fx+2\,e\right)^{2}+2\,\cos\left(2\,fx+2\,e\right)+1\right)^{\frac{1}{4}}\sin\left(\frac{1}{2}\,\arctan\left(\sin\left(2\,fx+2\,e\right),\cos\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] sqrt(a)*c*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x +
2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) +
sin(f*x + e), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e)
 + 1)^(1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) + cos(
f*x + e))/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x)), x)
```

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

$$\int \sqrt{a\left(\sec\left(e+fx\right)+1\right)}\left(c+d\sec\left(e+fx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*(c + d*sec(e + f*x)), x)
```

3.151 $\int \frac{\sqrt{a+a\sec(e+fx)}}{c+d\sec(e+fx)}\,dx$

Optimal. Leaf size=105

$$\frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}-\frac{2\sqrt{a}\,\sqrt{d}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\,\sqrt{a\sec(e+fx)+a}}\right)}{cf\sqrt{c+d}}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)/c/f-2*arctan(a^
(1/2)*d^(1/2)*tan(f*x+e)/(c+d)^(1/2)/(a+a*sec(f*x+e))^(1/2))*a^(1/2)*d^(1/2
)/c/f/(c+d)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3925, 3774, 203, 3967, 205}

$$\frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}-\frac{2\sqrt{a}\,\sqrt{d}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\,\sqrt{a\sec(e+fx)+a}}\right)}{cf\sqrt{c+d}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c*f) -
 (2*Sqrt[a]*Sqrt[d]*ArcTan[(Sqrt[a]*Sqrt[d]*Tan[e + f*x])/(Sqrt[c + d]*Sqrt
[a + a*Sec[e + f*x]])])/(c*Sqrt[c + d]*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 205

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

Rule 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3925

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_)), x_Symbol] :> Dist[1/c, Int[Sqrt[a + b*Csc[e + f*x]], x], x] - D
ist[d/c, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]])/(c + d*Csc[e + f*x]),
x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && (EqQ[a^2 - b
^2, 0] || EqQ[c^2 - d^2, 0])
```

Rule 3967

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/(c
sc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)), x_Symbol] :> Dist[(-2*b)/f, Subst[Int
[1/(b*c + a*d + d*x^2), x], x, (b*Cot[e + f*x])/Sqrt[a + b*Csc[e + f*x]]],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0
```

]

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{c+d\sec(e+fx)}\,dx = \frac{\int \sqrt{a+a\sec(e+fx)}\,dx}{c} - \frac{d\int \frac{\sec(e+fx)\sqrt{a+a\sec(e+fx)}}{c+d\sec(e+fx)}\,dx}{c}$$
$$= -\frac{(2a)\,\mathrm{Subst}\left(\int \frac{1}{a+x^2}\,dx, x, -\frac{a\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} + \frac{(2ad)\,\mathrm{Subst}\left(\int \frac{1}{ac+ad+dx^2}\,dx, x, -\frac{a}{\sqrt{a+}}\right.}{cf}$$
$$= \frac{2\sqrt{a}\,\tan^{-1}\left(\frac{\sqrt{a}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} - \frac{2\sqrt{a}\,\sqrt{d}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{d}\,\tan(e+fx)}{\sqrt{c+d}\,\sqrt{a+a\sec(e+fx)}}\right)}{c\sqrt{c+d}\,f}$$

Mathematica [C] time = 25.07, size = 2650, normalized size = 25.24

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x]),x]

[Out] (-4*Sqrt[2]*Cos[(e + f*x)/4]^2*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e +
 f*x)/2])/(1 + Cos[(e + f*x)/2])]*(d + c*Cos[e + f*x])*(c*EllipticF[ArcSin[
Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 2*(c + d)*Ellipti
cPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*S
qrt[2]] + d*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[
c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqr
t[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c -
 d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))
*Sec[(e + f*x)/2]*((Cos[(e + f*x)/2]*Sqrt[Sec[e + f*x]])/(2*(d + c*Cos[e +
f*x])) + (Cos[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]])/(2*(d + c*Cos[e + f*x]))
)*Sec[e + f*x]*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x
)/4]^2])/(c*(c + d)*f*(c + d*Sec[e + f*x])*((Sqrt[2]*Sqrt[(-1 + Sqrt[2] - (
-2 + Sqrt[2])*Cos[(e + f*x)/2])/(1 + Cos[(e + f*x)/2])]*(c*EllipticF[ArcSin
[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 2*(c + d)*Ellipt
icPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*
Sqrt[2]] + d*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt
[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sq
rt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c
- d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]])
)*Sqrt[Sec[e + f*x]]*Tan[(e + f*x)/4])/(c*(c + d)*Sqrt[3 - 2*Sqrt[2] - Tan[
(e + f*x)/4]^2]) + (2*Sqrt[2]*Cos[(e + f*x)/4]*Sqrt[(-1 + Sqrt[2] - (-2 + S
qrt[2])*Cos[(e + f*x)/2])/(1 + Cos[(e + f*x)/2])]*(c*EllipticF[ArcSin[Tan[(
e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 2*(c + d)*EllipticPi[-
3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2
]] + d*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c
- d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]
 + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)]
+ d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt
[Sec[e + f*x]]*Sin[(e + f*x)/4]*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x)/4]^2])/(
c*(c + d)) - (2*Sqrt[2]*Cos[(e + f*x)/4]^2*(c*EllipticF[ArcSin[Tan[(e + f*x
)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 2*(c + d)*EllipticPi[-3 + 2*S
qrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + d*
(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] -
 d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + Elli
```

```
pticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), A
rcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e
+ f*x]]*(((-2 + Sqrt[2])*Sin[(e + f*x)/2])/(2*(1 + Cos[(e + f*x)/2])) + ((-
1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)/2])*Sin[(e + f*x)/2])/(2*(1 + Co
s[(e + f*x)/2])^2))*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x)/4]^2])/(c*(c + d)*Sq
rt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)/2])/(1 + Cos[(e + f*x)/2])]
) - (2*Sqrt[2]*Cos[(e + f*x)/4]^2*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(
e + f*x)/2])/(1 + Cos[(e + f*x)/2])]*(c*EllipticF[ArcSin[Tan[(e + f*x)/4]/S
qrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 2*(c + d)*EllipticPi[-3 + 2*Sqrt[2]
, ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + d*(Ellip
ticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)),
ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi
[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[
Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sec[e + f*x]^(3/2
)*Sin[e + f*x]*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x)/4]^2])/(c*(c + d)) - (4*S
qrt[2]*Cos[(e + f*x)/4]^2*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)
/2])/(1 + Cos[(e + f*x)/2])]*Sqrt[Sec[e + f*x]]*Sqrt[3 - 2*Sqrt[2] - Tan[(e
 + f*x)/4]^2]*((c*Sec[(e + f*x)/4]^2)/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(
e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]
^2)/(3 - 2*Sqrt[2])]) - ((c + d)*Sec[(e + f*x)/4]^2)/(2*Sqrt[3 - 2*Sqrt[2]]
*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*T
an[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]
^2)/(3 - 2*Sqrt[2]))) + d*(Sec[(e + f*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1
 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e +
 f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 + ((-3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4
]^2)/((3 - 2*Sqrt[2])*(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)))) + Sec[(e + f
*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])
]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-
3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2)/((3 - 2*Sqrt[2])*(-3*c + 2*Sqrt[
2]*Sqrt[c*(c - d)] + d)))))))/(c*(c + d))))
```

fricas [**A**] time = 0.87, size = 669, normalized size = 6.37

$$\left[\frac{\sqrt{-\frac{ad}{c+d}}\log\left(\frac{2\,(c+d)\sqrt{-\frac{ad}{c+d}}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+(ac+2\,ad)\cos\left(fx+e\right)^{2}-ad+(ac+ad)\cos\left(fx+e\right)}{c\cos\left(fx+e\right)^{2}+(c+d)\cos\left(fx+e\right)+d}\right)+\sqrt{-a}\log\left(\frac{2\,a\cos\left(fx+e\right.}{}\right.}{cf}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [(sqrt(-a*d/(c + d))*log((2*(c + d)*sqrt(-a*d/(c + d))*sqrt((a*cos(f*x + e)
 + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^
2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e
) + d)) + sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e
) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f
*x + e) + 1)))/(c*f), -(2*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x
+ e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - sqrt(-a*d/(c + d))*log((2*(c +
 d)*sqrt(-a*d/(c + d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)
*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x +
e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) + d)))/(c*f), (2*sqrt(a*d/(c +
 d))*arctan((c + d)*sqrt(a*d/(c + d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*cos(f*x + e)/(a*d*sin(f*x + e))) + sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*
sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)
+ a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/(c*f), -2*(sqrt(a)*arctan(sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - sq
```

```
rt(a*d/(c + d))*arctan((c + d)*sqrt(a*d/(c + d))*sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*cos(f*x + e)/(a*d*sin(f*x + e))))/(c*f)]
```

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((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)4*sqrt(2)*(-1/4*a*sq
rt(-a)*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+e
xp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-
sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/sqrt(2)/c/abs(a)-1
/2*a*sqrt(-a)*d*atan(1/2*(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*ta
n(1/2*(f*x+exp(1))))^2-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1
/2*(f*x+exp(1))))^2+a*c+3*a*d)/sqrt(2)/sqrt(-d^2-c*d)/a)/sqrt(2)/sqrt(-d^2-
c*d)/a/c)*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 1.75, size = 502, normalized size = 4.78

$$-\frac{\left(2\sqrt{(c+d)(c-d)}\,\sqrt{\frac{d}{c-d}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)-d\ln\left(\frac{2\sqrt{\frac{d}{c-d}}\,\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sqrt{2}\,c\sin(fx+e)-2\sqrt{2}\,\sqrt{\frac{d}{c-d}}\cdots}{\sqrt{(c+\cdots}}\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] -1/2/f*(2*((c+d)*(c-d))^(1/2)*(d/(c-d))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))-d*ln(2*((d/(c-d))^(1/2)*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))
^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2
)*cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^
(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))+d*ln(2*(-(d/(c-d))^(1/2)*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)+2^(1/2)*(d/(c-d))^
(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)
*cos(f*x+e)+c*sin(f*x+e)-d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(
1/2)*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d)))*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*2^(1/2)/(d/(c-d))^(1/2)/((c+
d)*(c-d))^(1/2)/c
```

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

$$\int \frac{\sqrt{a\sec\left(fx+e\right)+a}}{d\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sec(f*x + e) + a)/(d*sec(f*x + e) + c), x)
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{c+\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x)), x)
```

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

$$\int \frac{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}{c+d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/(c + d*sec(e + f*x)), x)
```

3.152 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=219

$$-\frac{a^{3/2}\sqrt{d}\,(3c+2d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^2f(c+d)^{3/2}\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2a^{3/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\frac{}{cf(c+}$$

```
[Out] -a*d*tan(f*x+e)/c/(c+d)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*a^(3/2)
*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c^2/f/(a-a*sec(f*x+e))^
(1/2)/(a+a*sec(f*x+e))^(1/2)-a^(3/2)*(3*c+2*d)*arctanh(d^(1/2)*(a-a*sec(f*x
+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*d^(1/2)*tan(f*x+e)/c^2/(c+d)^(3/2)/f/(a-a*s
ec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 103, 156, 63, 206, 208}

$$-\frac{a^{3/2}\sqrt{d}\,(3c+2d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^2f(c+d)^{3/2}\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2a^{3/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\frac{}{cf(c+}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(3/2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^2*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (a^(3/2)*Sqrt[d]*(3*c +
 2*d)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan
[e + f*x])/(c^2*(c + d)^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e +
 f*x]]) - (a*d*Tan[e + f*x])/(c*(c + d)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*S
ec[e + f*x]))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 103

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_
))^(p_.), x_Symbol] :> Simp[(b*(a + b*x)^(m + 1)*(c + d*x)^(n + 1)*(e + f*x
)^(p + 1))/((m + 1)*(b*c - a*d)*(b*e - a*f)), x] + Dist[1/((m + 1)*(b*c - a
*d)*(b*e - a*f)), Int[(a + b*x)^(m + 1)*(c + d*x)^n*(e + f*x)^p*Simp[a*d*f*
(m + 1) - b*(d*e*(m + n + 2) + c*f*(m + p + 2)) - b*d*f*(m + n + p + 3)*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && LtQ[m, -1] && IntegerQ[
m] && (IntegerQ[n] || IntegersQ[2*n, 2*p])
```

Rule 156

```
Int[(((e_.) + (f_.)*(x_))^(p_)*((g_.) + (h_.)*(x_)))/(((a_.) + (b_.)*(x_))*
((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[(b*g - a*h)/(b*c - a*d), Int[(e +
f*x)^p/(a + b*x), x], x] - Dist[(d*g - c*h)/(b*c - a*d), Int[(e + f*x)^p/(c
 + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, h}, x]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c+d\sec(e+fx))^2}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(c+dx)^2}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{ad\tan(e+fx)}{c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))} - \frac{(a\tan(e+fx))\,\text{Subst}\left(\int \frac{a(c+d)\cdots}{x\sqrt{a-ax}\,\cdots}\right.}{c(c+d)f\sqrt{a-a\sec(e+fx)}\cdots}$$

$$= -\frac{ad\tan(e+fx)}{c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))} - \frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-a\cdots}}\right.}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a-\cdots}}$$

$$= -\frac{ad\tan(e+fx)}{c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))} + \frac{(2a\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{1-\frac{x^2}{a}}\cdots\right.}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{\cdots}}$$

$$= \frac{2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{a^{3/2}\sqrt{d}\,(3c+2d)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+\cdots)}}{\sqrt{a}\,\sqrt{c+d}}\right.}{c^2(c+d)^{3/2}f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+\cdots}}$$

Mathematica [C] time = 28.58, size = 2907, normalized size = 13.27

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] ((d + c*Cos[e + f*x])^2*Sec[(e + f*x)/2]*Sec[e + f*x]^2*Sqrt[a*(1 + Sec[e +
 f*x])]*(-((d*Sin[(e + f*x)/2])/(c^2*(c + d))) + (d^2*Sin[(e + f*x)/2])/(c^
2*(c + d)*(d + c*Cos[e + f*x]))))/(f*(c + d*Sec[e + f*x])^2) - (2*Sqrt[2]*C
os[(e + f*x)/4]^2*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)/2])/(1
+ Cos[(e + f*x)/2])]*(d + c*Cos[e + f*x])^2*(c*(2*c + d)*EllipticF[ArcSin[T
an[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*Ellipt
icPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*
Sqrt[2]] + d*(3*c + 2*d)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*
Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]]
, 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2
```

```
]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 -
12*Sqrt[2]]))*Sec[(e + f*x)/2]*((Cos[(e + f*x)/2]*Sqrt[Sec[e + f*x]])/(2*(c
 + d)*(d + c*Cos[e + f*x])) + (Cos[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]])/(2*
(c + d)*(d + c*Cos[e + f*x])) + (d*Cos[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]])
/(2*c*(c + d)*(d + c*Cos[e + f*x])))*Sec[e + f*x]^2*Sqrt[a*(1 + Sec[e + f*x
])]*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x)/4]^2])/(c^2*(c + d)^2*f*(c + d*Sec[e
 + f*x])^2*((Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)/2])/(1 + Cos
[(e + f*x)/2])]*(c*(2*c + d)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*S
qrt[2]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[
Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + d*(3*c + 2*d)*(El
lipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)
), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + Ellipti
cPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcS
in[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f
*x]]*Tan[(e + f*x)/4])/(Sqrt[2]*c^2*(c + d)^2*Sqrt[3 - 2*Sqrt[2] - Tan[(e +
 f*x)/4]^2]) + (Sqrt[2]*Cos[(e + f*x)/4]*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2]
)*Cos[(e + f*x)/2])/(1 + Cos[(e + f*x)/2])]*(c*(2*c + d)*EllipticF[ArcSin[T
an[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*Ellipt
icPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*
Sqrt[2]] + d*(3*c + 2*d)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*
Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]]
, 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2
]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 -
12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Sin[(e + f*x)/4]*Sqrt[3 - 2*Sqrt[2] - Tan[
(e + f*x)/4]^2])/(c^2*(c + d)^2) - (Sqrt[2]*Cos[(e + f*x)/4]^2*(c*(2*c + d)
*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] -
 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*
Sqrt[2]]], 17 - 12*Sqrt[2]] + d*(3*c + 2*d)*(EllipticPi[-(((-3 + 2*Sqrt[2])
*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/S
qrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d
))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 -
 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*(((-2 + Sqrt[2])*Sin[(e
 + f*x)/2])/(2*(1 + Cos[(e + f*x)/2])) + ((-1 + Sqrt[2] - (-2 + Sqrt[2])*Co
s[(e + f*x)/2])*Sin[(e + f*x)/2])/(2*(1 + Cos[(e + f*x)/2])^2))*Sqrt[3 - 2*
Sqrt[2] - Tan[(e + f*x)/4]^2])/(c^2*(c + d)^2*Sqrt[(-1 + Sqrt[2] - (-2 + Sq
rt[2])*Cos[(e + f*x)/2])/(1 + Cos[(e + f*x)/2])]) - (Sqrt[2]*Cos[(e + f*x)/
4]^2*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)/2])/(1 + Cos[(e + f*
x)/2])]*(c*(2*c + d)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]]
, 17 - 12*Sqrt[2]] - 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e +
 f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + d*(3*c + 2*d)*(EllipticPi
[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSi
n[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3
 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(
e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sec[e + f*x]^(3/2)*Sin
[e + f*x]*Sqrt[3 - 2*Sqrt[2] - Tan[(e + f*x)/4]^2])/(c^2*(c + d)^2) - (2*Sq
rt[2]*Cos[(e + f*x)/4]^2*Sqrt[(-1 + Sqrt[2] - (-2 + Sqrt[2])*Cos[(e + f*x)/
2])/(1 + Cos[(e + f*x)/2])]*Sqrt[Sec[e + f*x]]*Sqrt[3 - 2*Sqrt[2] - Tan[(e
+ f*x)/4]^2]*((c*(2*c + d)*Sec[(e + f*x)/4]^2)/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[
1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e
+ f*x)/4]^2)/(3 - 2*Sqrt[2])]) - ((c + d)^2*Sec[(e + f*x)/4]^2)/(Sqrt[3 - 2
*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*S
qrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*Tan[(e
+ f*x)/4]^2)/(3 - 2*Sqrt[2]))) + d*(3*c + 2*d)*(Sec[(e + f*x)/4]^2/(4*Sqrt[
3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 -
 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 + ((-3 + 2*Sqrt[2])*(c
 + d)*Tan[(e + f*x)/4]^2)/((3 - 2*Sqrt[2])*(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)]
 - d)))) + Sec[(e + f*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)
/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 -
 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2)/((3 - 2*Sqr
```

```
t[2])*(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d)))))))/(c^2*(c + d)^2)))
```

fricas [A] time = 2.87, size = 1413, normalized size = 6.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*c*d*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x +
 e) - ((3*c^2 + 2*c*d)*cos(f*x + e)^2 + 3*c*d + 2*d^2 + (3*c^2 + 5*c*d + 2*
d^2)*cos(f*x + e))*sqrt(-a*d/(c + d))*log((2*(c + d)*sqrt(-a*d/(c + d))*sqr
t((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a
*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c
 + d)*cos(f*x + e) + d)) - 2*((c^2 + c*d)*cos(f*x + e)^2 + c*d + d^2 + (c^2
 + 2*c*d + d^2)*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)
*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(
f*x + e) - a)/(cos(f*x + e) + 1)))/((c^4 + c^3*d)*f*cos(f*x + e)^2 + (c^4 +
 2*c^3*d + c^2*d^2)*f*cos(f*x + e) + (c^3*d + c^2*d^2)*f), -1/2*(2*c*d*sqrt
((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + 4*((c^2 + c
*d)*cos(f*x + e)^2 + c*d + d^2 + (c^2 + 2*c*d + d^2)*cos(f*x + e))*sqrt(a)*
arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*
x + e))) - ((3*c^2 + 2*c*d)*cos(f*x + e)^2 + 3*c*d + 2*d^2 + (3*c^2 + 5*c*d
 + 2*d^2)*cos(f*x + e))*sqrt(-a*d/(c + d))*log((2*(c + d)*sqrt(-a*d/(c + d)
)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c
+ 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2
 + (c + d)*cos(f*x + e) + d)))/((c^4 + c^3*d)*f*cos(f*x + e)^2 + (c^4 + 2*c
^3*d + c^2*d^2)*f*cos(f*x + e) + (c^3*d + c^2*d^2)*f), -(c*d*sqrt((a*cos(f*
x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - ((3*c^2 + 2*c*d)*cos(
f*x + e)^2 + 3*c*d + 2*d^2 + (3*c^2 + 5*c*d + 2*d^2)*cos(f*x + e))*sqrt(a*d
/(c + d))*arctan((c + d)*sqrt(a*d/(c + d))*sqrt((a*cos(f*x + e) + a)/cos(f*
x + e))*cos(f*x + e)/(a*d*sin(f*x + e))) - ((c^2 + c*d)*cos(f*x + e)^2 + c*
d + d^2 + (c^2 + 2*c*d + d^2)*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^
2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x
 + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/((c^4 + c^3*d)*f*cos(f*x +
 e)^2 + (c^4 + 2*c^3*d + c^2*d^2)*f*cos(f*x + e) + (c^3*d + c^2*d^2)*f), -(
c*d*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + 2*(
(c^2 + c*d)*cos(f*x + e)^2 + c*d + d^2 + (c^2 + 2*c*d + d^2)*cos(f*x + e))*
sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a
)*sin(f*x + e))) - ((3*c^2 + 2*c*d)*cos(f*x + e)^2 + 3*c*d + 2*d^2 + (3*c^2
 + 5*c*d + 2*d^2)*cos(f*x + e))*sqrt(a*d/(c + d))*arctan((c + d)*sqrt(a*d/(
c + d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(a*d*sin(f*x +
 e))))/((c^4 + c^3*d)*f*cos(f*x + e)^2 + (c^4 + 2*c^3*d + c^2*d^2)*f*cos(f*
x + e) + (c^3*d + c^2*d^2)*f)]
```

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((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
```

```
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)4*sqrt(2)*((-3*a*sqr
t(-a)*d^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))
))^2-a*sqrt(-a)*c*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f
*x+exp(1))))^2+a^2*sqrt(-a)*d^2-a^2*sqrt(-a)*c*d)/(-2*c^3+2*c*d^2)/(c*(sqrt
(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4-d*(sqrt(-a
*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4+2*a*c*(sqrt(-
a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+6*a*d*(sqrt(
-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a^2*c-a^2*d
)+1/4*(-2*a*sqrt(-a)*d^2-3*a*sqrt(-a)*c*d)*atan(1/2*(c*(sqrt(-a*tan(1/2*(f*
x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-d*(sqrt(-a*tan(1/2*(f*x+e
xp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a*c+3*a*d)/sqrt(2)/sqrt(-d^2
-c*d)/a)/sqrt(2)/sqrt(-d^2-c*d)/a/(c^3+c^2*d)-1/4*a*sqrt(-a)*ln(abs(2*(sqrt
(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*
abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x
+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/sqrt(2)/c^2/abs(a))*sign(cos(f*x+exp(1)
))/f
```

maple [B] time = 3.00, size = 97265, normalized size = 444.13

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^2,x)
[Out] result too large to display
```

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

$$\int \frac{\sqrt{a \sec\left(fx + e\right) + a}}{\left(d \sec\left(fx + e\right) + c\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^2,x, algorithm="maxima")
[Out] integrate(sqrt(a*sec(f*x + e) + a)/(d*sec(f*x + e) + c)^2, x)
```

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

$$\int \frac{\sqrt{a + \frac{a}{\cos\left(e+f\,x\right)}}}{\left(c + \frac{d}{\cos\left(e+f\,x\right)}\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^2,x)
[Out] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^2, x)
```

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

$$\int \frac{\sqrt{a \left(\sec\left(e + fx\right) + 1\right)}}{\left(c + d \sec\left(e + fx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**2,x)
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/(c + d*sec(e + f*x))**2, x)
```

3.153 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=287

$$\frac{2a^{3/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\frac{a^{3/2}\sqrt{d}\left(15c^2+20cd+8d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{4c^3f(c+d)^{5/2}\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\cdots$$

```
[Out] -1/2*a*d*tan(f*x+e)/c/(c+d)/f/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)-1/4
*a*d*(7*c+4*d)*tan(f*x+e)/c^2/(c+d)^2/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(
1/2)+2*a^(3/2)*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c^3/f/(a-
a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-1/4*a^(3/2)*(15*c^2+20*c*d+8*d^2
)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*d^(1/2)*tan(f
*x+e)/c^3/(c+d)^(5/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.259$, Rules used = {3940, 103, 151, 156, 63, 206, 208}

$$-\frac{a^{3/2}\sqrt{d}\left(15c^2+20cd+8d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{4c^3f(c+d)^{5/2}\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2a^{3/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(3/2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^3*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (a^(3/2)*Sqrt[d]*(15*c^
2 + 20*c*d + 8*d^2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqr
t[c + d])]*Tan[e + f*x])/(4*c^3*(c + d)^(5/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sq
rt[a + a*Sec[e + f*x]]) - (a*d*Tan[e + f*x])/(2*c*(c + d)*f*Sqrt[a + a*Sec[
e + f*x]]*(c + d*Sec[e + f*x])^2) - (a*d*(7*c + 4*d)*Tan[e + f*x])/(4*c^2*(
c + d)^2*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 103

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_
))^(p_.), x_Symbol] :> Simp[(b*(a + b*x)^(m + 1)*(c + d*x)^(n + 1)*(e + f*x
)^(p + 1))/((m + 1)*(b*c - a*d)*(b*e - a*f)), x] + Dist[1/((m + 1)*(b*c - a
*d)*(b*e - a*f)), Int[(a + b*x)^(m + 1)*(c + d*x)^n*(e + f*x)^p*Simp[a*d*f*
(m + 1) - b*(d*e*(m + n + 2) + c*f*(m + p + 2)) - b*d*f*(m + n + p + 3)*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, n, p}, x] && LtQ[m, -1] && IntegerQ[
m] && (IntegerQ[n] || IntegersQ[2*n, 2*p])
```

Rule 151

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_)), x_Symbol] :> Simp[((b*g - a*h)*(a + b*x)^(m +
1)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/((m + 1)*(b*c - a*d)*(b*e - a*f)),
x] + Dist[1/((m + 1)*(b*c - a*d)*(b*e - a*f)), Int[(a + b*x)^(m + 1)*(c + d
```

```
*x)^n*(e + f*x)^p*Simp[(a*d*f*g - b*(d*e + c*f)*g + b*c*e*h)*(m + 1) - (b*g
 - a*h)*(d*e*(n + 1) + c*f*(p + 1)) - d*f*(b*g - a*h)*(m + n + p + 3)*x, x]
, x], x] /; FreeQ[{a, b, c, d, e, f, g, h, n, p}, x] && LtQ[m, -1] && Integ
erQ[m]
```

Rule 156

```
Int[(((e_.) + (f_.)*(x_))^(p_)*((g_.) + (h_.)*(x_)))/(((a_.) + (b_.)*(x_))*
((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[(b*g - a*h)/(b*c - a*d), Int[(e +
f*x)^p/(a + b*x), x], x] - Dist[(d*g - c*h)/(b*c - a*d), Int[(e + f*x)^p/(c
 + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, h}, x]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c+d\sec(e+fx))^3}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(c+dx)^3}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{ad\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} - \frac{(a\tan(e+fx))\,\text{Subst}\left(\int \frac{2}{x\cdots}\right.}{2c(c+d)f\sqrt{a-a\sec(e\cdots}}$$

$$= -\frac{ad\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} - \frac{ad(7c+4d)\,\mathrm{ta}\cdots}{4c^2(c+d)^2f\sqrt{a+a\sec(e+\cdots}}$$

$$= -\frac{ad\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} - \frac{ad(7c+4d)\,\mathrm{ta}\cdots}{4c^2(c+d)^2f\sqrt{a+a\sec(e+\cdots}}$$

$$= -\frac{ad\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} - \frac{ad(7c+4d)\,\mathrm{ta}\cdots}{4c^2(c+d)^2f\sqrt{a+a\sec(e+\cdots}}$$

$$= \frac{2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{a^{3/2}\sqrt{d}\,\left(15c^2+20cd+8d^2\right)\tanh^{-1}\cdots}{4c^3(c+d)^{5/2}f\sqrt{a-a\sec(e+\cdots}}$$

Mathematica [C] time = 24.49, size = 3070, normalized size = 10.70

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] ((d + c*Cos[e + f*x])^3*Sec[(e + f*x)/2]*Sec[e + f*x]^3*Sqrt[a*(1 + Sec[e +
 f*x])]*((-3*d*(3*c + 2*d)*Sin[(e + f*x)/2])/(4*c^3*(c + d)^2) - (d^3*Sin[(
e + f*x)/2])/(2*c^3*(c + d)*(d + c*Cos[e + f*x])^2) + (11*c*d^2*Sin[(e + f*
x)/2] + 8*d^3*Sin[(e + f*x)/2])/(4*c^3*(c + d)^2*(d + c*Cos[e + f*x]))))/(f
*(c + d*Sec[e + f*x])^3) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*(d + c*C
os[e + f*x])^3*(c*(8*c^2 + 9*c*d + 4*d^2)*EllipticF[ArcSin[Tan[(e + f*x)/4]
/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*(c + d)^3*EllipticPi[-3 + 2*Sq
rt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + d*(
15*c^2 + 20*c*d + 8*d^2)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*
Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]]
, 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2
]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 -
12*Sqrt[2]]))*Sec[(e + f*x)/2]*((Cos[(e + f*x)/2]*Sqrt[Sec[e + f*x]])/(2*(c
 + d)^2*(d + c*Cos[e + f*x])) + (d*Cos[(e + f*x)/2]*Sqrt[Sec[e + f*x]])/(8*
c*(c + d)^2*(d + c*Cos[e + f*x])) + (Cos[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]
])/(2*(c + d)^2*(d + c*Cos[e + f*x])) + (d*Cos[(3*(e + f*x))/2]*Sqrt[Sec[e
+ f*x]])/(c*(c + d)^2*(d + c*Cos[e + f*x])) + (d^2*Cos[(3*(e + f*x))/2]*Sqr
t[Sec[e + f*x]])/(2*c^2*(c + d)^2*(d + c*Cos[e + f*x])))*Sec[e + f*x]^3*Sqr
t[a*(1 + Sec[e + f*x])]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[
1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(2*c^3*(c + d)^3*f*(c + d*Sec[e +
f*x])^3*((Sqrt[3 - 2*Sqrt[2]]*(3 + 2*Sqrt[2])*(c*(8*c^2 + 9*c*d + 4*d^2)*El
lipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16
*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sq
rt[2]]], 17 - 12*Sqrt[2]] + d*(15*c^2 + 20*c*d + 8*d^2)*(EllipticPi[-(((-3
+ 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e
 + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqr
t[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)
/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Tan[(e + f*
x)/4]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(8*c^3*(c + d)^3*Sqrt[
1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]) - (Sqrt[3 - 2*Sqrt[2]]*(-3 + 2*Sqr
t[2])*(c*(8*c^2 + 9*c*d + 4*d^2)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 -
 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2], Ar
cSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + d*(15*c^2 +
20*c*d + 8*d^2)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*S
qrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12
*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*
(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2
]]))*Sqrt[Sec[e + f*x]]*Tan[(e + f*x)/4]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e +
f*x)/4]^2])/(8*c^3*(c + d)^3*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])
 + (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]*(c*(8*c^2 + 9*c*d + 4*d^2)*Ellipti
cF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*(c +
 d)^3*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]
]], 17 - 12*Sqrt[2]] + d*(15*c^2 + 20*c*d + 8*d^2)*(EllipticPi[-(((-3 + 2*S
qrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*
x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])
*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/S
qrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Sin[(e + f*x)/4]
*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan
[(e + f*x)/4]^2])/(4*c^3*(c + d)^3) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]
^2*(c*(8*c^2 + 9*c*d + 4*d^2)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*
Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2], ArcSi
n[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + d*(15*c^2 + 20*
```

```
c*d + 8*d^2)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt
[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sq
rt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c
- d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]])
)*Sec[e + f*x]^(3/2)*Sin[e + f*x]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4
]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(4*c^3*(c + d)^3) - (Sqr
t[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*Sqrt[Sec[e + f*x]]*Sqrt[1 + (-3 + 2*Sqr
t[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*((c*
(8*c^2 + 9*c*d + 4*d^2)*Sec[(e + f*x)/4]^2)/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 -
 Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f
*x)/4]^2)/(3 - 2*Sqrt[2])]) - (4*(c + d)^3*Sec[(e + f*x)/4]^2)/(Sqrt[3 - 2*
Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sq
rt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*Tan[(e +
 f*x)/4]^2)/(3 - 2*Sqrt[2]))) + d*(15*c^2 + 20*c*d + 8*d^2)*(Sec[(e + f*x)/
4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sq
rt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 + ((-3 +
2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2)/((3 - 2*Sqrt[2])*(3*c + 2*Sqrt[2]*Sq
rt[c*(c - d)] - d)))) + Sec[(e + f*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 -
Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*
x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2
)/((3 - 2*Sqrt[2])*(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d)))))))/(2*c^3*(c +
 d)^3)))
```

fricas [B] time = 7.74, size = 2368, normalized size = 8.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/8*((15*c^2*d^2 + 20*c*d^3 + 8*d^4 + (15*c^4 + 20*c^3*d + 8*c^2*d^2)*cos(
f*x + e)^3 + (15*c^4 + 50*c^3*d + 48*c^2*d^2 + 16*c*d^3)*cos(f*x + e)^2 + (
30*c^3*d + 55*c^2*d^2 + 36*c*d^3 + 8*d^4)*cos(f*x + e))*sqrt(-a*d/(c + d))*
log((2*(c + d)*sqrt(-a*d/(c + d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*c
os(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)
*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) + d)) + 8*(c^2*d^2
+ 2*c*d^3 + d^4 + (c^4 + 2*c^3*d + c^2*d^2)*cos(f*x + e)^3 + (c^4 + 4*c^3*d
 + 5*c^2*d^2 + 2*c*d^3)*cos(f*x + e)^2 + (2*c^3*d + 5*c^2*d^2 + 4*c*d^3 + d
^4)*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a
)/(cos(f*x + e) + 1)) - 2*(3*(3*c^3*d + 2*c^2*d^2)*cos(f*x + e)^2 + (7*c^2*
d^2 + 4*c*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*
x + e))/((c^7 + 2*c^6*d + c^5*d^2)*f*cos(f*x + e)^3 + (c^7 + 4*c^6*d + 5*c^
5*d^2 + 2*c^4*d^3)*f*cos(f*x + e)^2 + (2*c^6*d + 5*c^5*d^2 + 4*c^4*d^3 + c^
3*d^4)*f*cos(f*x + e) + (c^5*d^2 + 2*c^4*d^3 + c^3*d^4)*f), -1/8*(16*(c^2*d
^2 + 2*c*d^3 + d^4 + (c^4 + 2*c^3*d + c^2*d^2)*cos(f*x + e)^3 + (c^4 + 4*c^
3*d + 5*c^2*d^2 + 2*c*d^3)*cos(f*x + e)^2 + (2*c^3*d + 5*c^2*d^2 + 4*c*d^3
+ d^4)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - (15*c^2*d^2 + 20*c*d^3 + 8*d^4 + (1
5*c^4 + 20*c^3*d + 8*c^2*d^2)*cos(f*x + e)^3 + (15*c^4 + 50*c^3*d + 48*c^2*
d^2 + 16*c*d^3)*cos(f*x + e)^2 + (30*c^3*d + 55*c^2*d^2 + 36*c*d^3 + 8*d^4)
*cos(f*x + e))*sqrt(-a*d/(c + d))*log((2*(c + d)*sqrt(-a*d/(c + d))*sqrt((a
*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*
cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d
)*cos(f*x + e) + d)) + 2*(3*(3*c^3*d + 2*c^2*d^2)*cos(f*x + e)^2 + (7*c^2*d
^2 + 4*c*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x
 + e))/((c^7 + 2*c^6*d + c^5*d^2)*f*cos(f*x + e)^3 + (c^7 + 4*c^6*d + 5*c^5
*d^2 + 2*c^4*d^3)*f*cos(f*x + e)^2 + (2*c^6*d + 5*c^5*d^2 + 4*c^4*d^3 + c^3
*d^4)*f*cos(f*x + e) + (c^5*d^2 + 2*c^4*d^3 + c^3*d^4)*f), 1/4*((15*c^2*d^2
 + 20*c*d^3 + 8*d^4 + (15*c^4 + 20*c^3*d + 8*c^2*d^2)*cos(f*x + e)^3 + (15*
```

```
c^4 + 50*c^3*d + 48*c^2*d^2 + 16*c*d^3)*cos(f*x + e)^2 + (30*c^3*d + 55*c^2
*d^2 + 36*c*d^3 + 8*d^4)*cos(f*x + e))*sqrt(a*d/(c + d))*arctan((c + d)*sqr
t(a*d/(c + d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(a*d*si
n(f*x + e))) + 4*(c^2*d^2 + 2*c*d^3 + d^4 + (c^4 + 2*c^3*d + c^2*d^2)*cos(f
*x + e)^3 + (c^4 + 4*c^3*d + 5*c^2*d^2 + 2*c*d^3)*cos(f*x + e)^2 + (2*c^3*d
 + 5*c^2*d^2 + 4*c*d^3 + d^4)*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^
2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x
 + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - (3*(3*c^3*d + 2*c^2*d^2)*
cos(f*x + e)^2 + (7*c^2*d^2 + 4*c*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) +
 a)/cos(f*x + e))*sin(f*x + e))/((c^7 + 2*c^6*d + c^5*d^2)*f*cos(f*x + e)^3
 + (c^7 + 4*c^6*d + 5*c^5*d^2 + 2*c^4*d^3)*f*cos(f*x + e)^2 + (2*c^6*d + 5*
c^5*d^2 + 4*c^4*d^3 + c^3*d^4)*f*cos(f*x + e) + (c^5*d^2 + 2*c^4*d^3 + c^3*
d^4)*f), -1/4*(8*(c^2*d^2 + 2*c*d^3 + d^4 + (c^4 + 2*c^3*d + c^2*d^2)*cos(f
*x + e)^3 + (c^4 + 4*c^3*d + 5*c^2*d^2 + 2*c*d^3)*cos(f*x + e)^2 + (2*c^3*d
 + 5*c^2*d^2 + 4*c*d^3 + d^4)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x
+ e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - (15*c^2*d^2
+ 20*c*d^3 + 8*d^4 + (15*c^4 + 20*c^3*d + 8*c^2*d^2)*cos(f*x + e)^3 + (15*c
^4 + 50*c^3*d + 48*c^2*d^2 + 16*c*d^3)*cos(f*x + e)^2 + (30*c^3*d + 55*c^2*
d^2 + 36*c*d^3 + 8*d^4)*cos(f*x + e))*sqrt(a*d/(c + d))*arctan((c + d)*sqrt
(a*d/(c + d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(a*d*sin
(f*x + e))) + (3*(3*c^3*d + 2*c^2*d^2)*cos(f*x + e)^2 + (7*c^2*d^2 + 4*c*d^
3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/((c^
7 + 2*c^6*d + c^5*d^2)*f*cos(f*x + e)^3 + (c^7 + 4*c^6*d + 5*c^5*d^2 + 2*c^
4*d^3)*f*cos(f*x + e)^2 + (2*c^6*d + 5*c^5*d^2 + 4*c^4*d^3 + c^3*d^4)*f*cos
(f*x + e) + (c^5*d^2 + 2*c^4*d^3 + c^3*d^4)*f)]
```

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((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)4*sqrt(2)*((-12*a*sq
rt(-a)*d^5*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)
)))^6+13*a*sqrt(-a)*c*d^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(
1/2*(f*x+exp(1))))^6+33*a*sqrt(-a)*c^2*d^3*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2
+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6-25*a*sqrt(-a)*c^3*d^2*(sqrt(-a*tan(1/
2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6-9*a*sqrt(-a)*c^4*d*(
sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6+76*a^2
*sqrt(-a)*d^5*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp
(1))))^4+59*a^2*sqrt(-a)*c*d^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)
*tan(1/2*(f*x+exp(1))))^4-149*a^2*sqrt(-a)*c^2*d^3*(sqrt(-a*tan(1/2*(f*x+ex
p(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4-87*a^2*sqrt(-a)*c^3*d^2*(sqrt
(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4-27*a^2*sqr
t(-a)*c^4*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1
))))^4-36*a^3*sqrt(-a)*d^5*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan
(1/2*(f*x+exp(1))))^2+7*a^3*sqrt(-a)*c*d^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2
+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+99*a^3*sqrt(-a)*c^2*d^3*(sqrt(-a*tan(
1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-43*a^3*sqrt(-a)*c^
3*d^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2
```

```
-27*a^3*sqrt(-a)*c^4*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2
*(f*x+exp(1))))^2+4*a^4*sqrt(-a)*d^5-7*a^4*sqrt(-a)*c*d^4-7*a^4*sqrt(-a)*c^
2*d^3+19*a^4*sqrt(-a)*c^3*d^2-9*a^4*sqrt(-a)*c^4*d)/(c*(sqrt(-a*tan(1/2*(f*
x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4-d*(sqrt(-a*tan(1/2*(f*x+e
xp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4+2*a*c*(sqrt(-a*tan(1/2*(f*x+
exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+6*a*d*(sqrt(-a*tan(1/2*(f*x
+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a^2*c-a^2*d)^2/(-8*c^6-8*c
^2*d^4+16*c^4*d^2)+1/4*(-8*a*sqrt(-a)*d^3-20*a*sqrt(-a)*c*d^2-15*a*sqrt(-a)
*c^2*d)*atan(1/2*(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f
*x+exp(1))))^2-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+
exp(1))))^2+a*c+3*a*d)/sqrt(2)/sqrt(-d^2-c*d)/a)/sqrt(2)/sqrt(-d^2-c*d)/a/(
4*c^5+4*c^3*d^2+8*c^4*d)-1/4*a*sqrt(-a)*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(
1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sq
rt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2
)*abs(a)-6*a))/sqrt(2)/c^3/abs(a))*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 19.10, size = 330749, normalized size = 1152.44

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^3,x)
[Out] result too large to display
```

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((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^3,x)
[Out] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^3, x)
```

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

$$\int \frac{\sqrt{a \left(\sec{\left(e + f x \right)} + 1\right)}}{\left(c + d \sec{\left(e + f x \right)}\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**3,x)
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/(c + d*sec(e + f*x))**3, x)
```

3.154 $\int (a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^3\,dx$

Optimal. Leaf size=241

$$\frac{2a^{5/2}c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^2\tan(e+fx)\left(d\left(24c^2+111cd+52d^2\right)\sec(e+fx)+2\left(36c^3+24\right.\right.}{105f\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2/35*a^2*(6*c+13*d)*(c+d*sec(f*x+e))^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+
2/7*a^2*(c+d*sec(f*x+e))^3*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/105*a^2*(7
2*c^3+486*c^2*d+378*c*d^2+104*d^3+d*(24*c^2+111*c*d+52*d^2)*sec(f*x+e))*tan
(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2*a^(5/2)*c^3*arctanh((a-a*sec(f*x+e))^(1/
2)/a^(1/2))*tan(f*x+e)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3940, 153, 147, 63, 206}

$$\frac{2a^2\tan(e+fx)\left(d\left(24c^2+111cd+52d^2\right)\sec(e+fx)+2\left(243c^2d+36c^3+189cd^2+52d^3\right)\right)}{105f\sqrt{a\sec(e+fx)+a}}+\frac{2a^{5/2}c^3\tan(e+fx)}{f\sqrt{a-a\sec(e+f}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(5/2)*c^3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*(6*c + 13*d)*(c
+ d*Sec[e + f*x])^2*Tan[e + f*x])/(35*f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*
(c + d*Sec[e + f*x])^3*Tan[e + f*x])/(7*f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^
2*(2*(36*c^3 + 243*c^2*d + 189*c*d^2 + 52*d^3) + d*(24*c^2 + 111*c*d + 52*d
^2)*Sec[e + f*x])*Tan[e + f*x])/(105*f*Sqrt[a + a*Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 147

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_) + (f_.)*(x_
))*((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[((a*d*f*h*(n + 2) + b*c*f*h*(m
+ 2) - b*d*(f*g + e*h)*(m + n + 3) - b*d*f*h*(m + n + 2)*x)*(a + b*x)^(m +
1)*(c + d*x)^(n + 1))/(b^2*d^2*(m + n + 2)*(m + n + 3)), x] + Dist[(a^2*d^2
*f*h*(n + 1)*(n + 2) + a*b*d*(n + 1)*(2*c*f*h*(m + 1) - d*(f*g + e*h)*(m +
n + 3)) + b^2*(c^2*f*h*(m + 1)*(m + 2) - c*d*(f*g + e*h)*(m + 1)*(m + n + 3
) + d^2*e*g*(m + n + 2)*(m + n + 3)))/(b^2*d^2*(m + n + 2)*(m + n + 3)), In
t[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n},
x] && NeQ[m + n + 2, 0] && NeQ[m + n + 3, 0]
```

Rule 153

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_)), x_Symbol] :> Simp[(h*(a + b*x)^m*(c + d*x)^(n
+ 1)*(e + f*x)^(p + 1))/(d*f*(m + n + p + 2)), x] + Dist[1/(d*f*(m + n + p
+ 2)), Int[(a + b*x)^(m - 1)*(c + d*x)^n*(e + f*x)^p*Simp[a*d*f*g*(m + n +
p + 2) - h*(b*c*e*m + a*(d*e*(n + 1) + c*f*(p + 1))) + (b*d*f*g*(m + n + p
+ 2) + h*(a*d*f*m - b*(d*e*(m + n + 1) + c*f*(m + p + 1))))*x, x], x], x] /
```

```
; FreeQ[{a, b, c, d, e, f, g, h, n, p}, x] && GtQ[m, 0] && NeQ[m + n + p +
2, 0] && IntegerQ[m]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^3\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(a+ax)(c+dx)^3}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2a^2(c+d\sec(e+fx))^3\tan(e+fx)}{7f\sqrt{a+a\sec(e+fx)}} + \frac{(2a\tan(e+fx))\text{Subst}}{7f\sqrt{a-}}$$

$$= \frac{2a^2(6c+13d)(c+d\sec(e+fx))^2\tan(e+fx)}{35f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2(c+d\sec}{7f\sqrt{a}}$$

$$= \frac{2a^2(6c+13d)(c+d\sec(e+fx))^2\tan(e+fx)}{35f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2(c+d\sec}{7f\sqrt{a}}$$

$$= \frac{2a^2(6c+13d)(c+d\sec(e+fx))^2\tan(e+fx)}{35f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2(c+d\sec}{7f\sqrt{a}}$$

$$= \frac{2a^{5/2}c^3\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}} + \frac{2a^2(6c+13d)(}{35f}$$

Mathematica [A] time = 3.89, size = 219, normalized size = 0.91

$$\frac{a\sec\left(\frac{1}{2}(e+fx)\right)\sec^3(e+fx)\sqrt{a(\sec(e+fx)+1)}\left(420\sqrt{2}c^3\sin^{-1}\left(\sqrt{2}\sin\left(\frac{1}{2}(e+fx)\right)\right)\cos^{\frac{7}{2}}(e+fx)+2\sin\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (a*Sec[(e + f*x)/2]*Sec[e + f*x]^3*Sqrt[a*(1 + Sec[e + f*x])]*(420*Sqrt[2]*
c^3*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]]*Cos[e + f*x]^(7/2) + 2*(210*c^2*d + 37
```

```
8*c*d^2 + 164*d^3 + 9*(35*c^3 + 175*c^2*d + 154*c*d^2 + 52*d^3)*Cos[e + f*x
] + 2*d*(105*c^2 + 189*c*d + 52*d^2)*Cos[2*(e + f*x)] + 105*c^3*Cos[3*(e +
f*x)] + 525*c^2*d*Cos[3*(e + f*x)] + 378*c*d^2*Cos[3*(e + f*x)] + 104*d^3*C
os[3*(e + f*x)])*Sin[(e + f*x)/2]))/(420*f)
```

fricas [A] time = 0.50, size = 482, normalized size = 2.00

$$\left[\frac{105\left(ac^3\cos\left(fx+e\right)^4+ac^3\cos\left(fx+e\right)^3\right)\sqrt{-a}\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/105*(105*(a*c^3*cos(f*x + e)^4 + a*c^3*cos(f*x + e)^3)*sqrt(-a)*log((2*a
*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*
x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(15*a*d^3
 + (105*a*c^3 + 525*a*c^2*d + 378*a*c*d^2 + 104*a*d^3)*cos(f*x + e)^3 + (10
5*a*c^2*d + 189*a*c*d^2 + 52*a*d^3)*cos(f*x + e)^2 + 3*(21*a*c*d^2 + 13*a*d
^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*
cos(f*x + e)^4 + f*cos(f*x + e)^3), -2/105*(105*(a*c^3*cos(f*x + e)^4 + a*c
^3*cos(f*x + e)^3)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*c
os(f*x + e)/(sqrt(a)*sin(f*x + e))) - (15*a*d^3 + (105*a*c^3 + 525*a*c^2*d
+ 378*a*c*d^2 + 104*a*d^3)*cos(f*x + e)^3 + (105*a*c^2*d + 189*a*c*d^2 + 52
*a*d^3)*cos(f*x + e)^2 + 3*(21*a*c*d^2 + 13*a*d^3)*cos(f*x + e))*sqrt((a*co
s(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^4 + f*cos(f*x +
 e)^3)]
```

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((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^3,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)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/
2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check s
ign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unab
le to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-
```

```
4*pi/x/2)2*(2*(((-1/216090000*(108045000*sqrt(2)*a^5*c^3*sign(cos(f*x+exp(1
)))+78204000*sqrt(2)*a^5*d^3*sign(cos(f*x+exp(1)))+259308000*sqrt(2)*a^5*c*
d^2*sign(cos(f*x+exp(1)))+432180000*sqrt(2)*a^5*c^2*d*sign(cos(f*x+exp(1)))
)*tan(1/2*(f*x+exp(1)))^2-1/147000*(-220500*sqrt(2)*a^5*c^3*sign(cos(f*x+ex
p(1)))-186200*sqrt(2)*a^5*d^3*sign(cos(f*x+exp(1)))-617400*sqrt(2)*a^5*c*d^
2*sign(cos(f*x+exp(1)))-1029000*sqrt(2)*a^5*c^2*d*sign(cos(f*x+exp(1)))))*t
an(1/2*(f*x+exp(1)))^2+1/3087000*(-4630500*sqrt(2)*a^5*c^3*sign(cos(f*x+exp
(1)))-4116000*sqrt(2)*a^5*d^3*sign(cos(f*x+exp(1)))-18522000*sqrt(2)*a^5*c*
d^2*sign(cos(f*x+exp(1)))-24696000*sqrt(2)*a^5*c^2*d*sign(cos(f*x+exp(1))))
)*tan(1/2*(f*x+exp(1)))^2+1/14700*(7350*sqrt(2)*a^5*c^3*sign(cos(f*x+exp(1)
))+14700*sqrt(2)*a^5*d^3*sign(cos(f*x+exp(1)))+44100*sqrt(2)*a^5*c*d^2*sign
(cos(f*x+exp(1)))+44100*sqrt(2)*a^5*c^2*d*sign(cos(f*x+exp(1)))))/sqrt(-a*t
an(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^3*tan(1/2*(f*x+exp
(1)))-1/2*a^2*sqrt(-a)*c^3*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*
(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/
abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2
+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.85, size = 539, normalized size = 2.24

$$\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(105\sqrt{2}\,\left(\cos^3\left(fx+e\right)\right)\sin\left(fx+e\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{7}{2}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)c^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^3,x)
```

```
[Out] 1/840/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(105*2^(1/2)*cos(f*x+e)^3*sin(f
*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^3+315*2^(1/2)*cos(f*x+e)^
2*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(f*x+e
)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^3+315*2^(1/2)*cos(
f*x+e)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^3+105*2^(1/2)
*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^3*sin(f*x+e)-1680*cos(f*x+e)^4
*c^3-8400*cos(f*x+e)^4*c^2*d-6048*cos(f*x+e)^4*c*d^2-1664*cos(f*x+e)^4*d^3+
1680*cos(f*x+e)^3*c^3+6720*cos(f*x+e)^3*c^2*d+3024*cos(f*x+e)^3*c*d^2+832*c
os(f*x+e)^3*d^3+1680*cos(f*x+e)^2*c^2*d+2016*cos(f*x+e)^2*c*d^2+208*cos(f*x
+e)^2*d^3+1008*cos(f*x+e)*c*d^2+384*cos(f*x+e)*d^3+240*d^3)/cos(f*x+e)^3/si
n(f*x+e)*a
```

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((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{3/2}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))^3,x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))^3, x)
```

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

$$\int \left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\left(c+d\sec\left(e+fx\right)\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)*(c+d*sec(f*x+e))**3,x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)*(c + d*sec(e + f*x))**3, x)
```

3.155 $\int (a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^2\,dx$

Optimal. Leaf size=176

$$\frac{2a^{5/2}c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^2\tan(e+fx)\left(2\left(6c^2+25cd+9d^2\right)+d(4c+9d)\sec(e+fx)\right)}{15f\sqrt{a\sec(e+fx)+a}}+$$

```
[Out] 2/5*a^2*(c+d*sec(f*x+e))^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/15*a^2*(12
*c^2+50*c*d+18*d^2+d*(4*c+9*d)*sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1
/2)+2*a^(5/2)*c^2*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/f/(a-a
*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3940, 153, 147, 63, 206}

$$\frac{2a^2\tan(e+fx)\left(2\left(6c^2+25cd+9d^2\right)+d(4c+9d)\sec(e+fx)\right)}{15f\sqrt{a\sec(e+fx)+a}}+\frac{2a^{5/2}c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(5/2)*c^2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*(c + d*Sec[e + f
*x])^2*Tan[e + f*x])/(5*f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*(2*(6*c^2 + 25
*c*d + 9*d^2) + d*(4*c + 9*d)*Sec[e + f*x])*Tan[e + f*x])/(15*f*Sqrt[a + a*
Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 147

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_) + (f_.)*(x_
))*((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[((a*d*f*h*(n + 2) + b*c*f*h*(m
+ 2) - b*d*(f*g + e*h)*(m + n + 3) - b*d*f*h*(m + n + 2)*x)*(a + b*x)^(m +
1)*(c + d*x)^(n + 1))/(b^2*d^2*(m + n + 2)*(m + n + 3)), x] + Dist[(a^2*d^2
*f*h*(n + 1)*(n + 2) + a*b*d*(n + 1)*(2*c*f*h*(m + 1) - d*(f*g + e*h)*(m +
n + 3)) + b^2*(c^2*f*h*(m + 1)*(m + 2) - c*d*(f*g + e*h)*(m + 1)*(m + n + 3
) + d^2*e*g*(m + n + 2)*(m + n + 3)))/(b^2*d^2*(m + n + 2)*(m + n + 3)), In
t[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n},
x] && NeQ[m + n + 2, 0] && NeQ[m + n + 3, 0]
```

Rule 153

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_)), x_Symbol] :> Simp[(h*(a + b*x)^m*(c + d*x)^(n
+ 1)*(e + f*x)^(p + 1))/(d*f*(m + n + p + 2)), x] + Dist[1/(d*f*(m + n + p
+ 2)), Int[(a + b*x)^(m - 1)*(c + d*x)^n*(e + f*x)^p*Simp[a*d*f*g*(m + n +
p + 2) - h*(b*c*e*m + a*(d*e*(n + 1) + c*f*(p + 1))) + (b*d*f*g*(m + n + p
+ 2) + h*(a*d*f*m - b*(d*e*(m + n + 1) + c*f*(m + p + 1))))*x, x], x], x] /
; FreeQ[{a, b, c, d, e, f, g, h, n, p}, x] && GtQ[m, 0] && NeQ[m + n + p +
```

```
2, 0] && IntegerQ[m]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^2\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(a+ax)(c+dx)^2}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2a^2(c+d\sec(e+fx))^2\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}} + \frac{(2a\tan(e+fx))\text{Subst}\Bigg(\int}{5f\sqrt{a-a\,\text{se}}}$$

$$= \frac{2a^2(c+d\sec(e+fx))^2\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2\left(2\left(6c^2+25cd+9d^2\right)\right.}{15f\sqrt{}}$$

$$= \frac{2a^2(c+d\sec(e+fx))^2\tan(e+fx)}{5f\sqrt{a+a\sec(e+fx)}} + \frac{2a^2\left(2\left(6c^2+25cd+9d^2\right)\right.}{15f\sqrt{}}$$

$$= \frac{2a^{5/2}c^2\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}} + \frac{2a^2(c+d\sec(e+}{5f\sqrt{a+a\,\text{se}}}$$

Mathematica [A] time = 1.33, size = 145, normalized size = 0.82

$$\frac{a\sec\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\left(2\sin\left(\frac{1}{2}(e+fx)\right)\left(\left(15c^2+50cd+18d^2\right)\cos(2(e+fx))+15c\right.\right.}{30f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (a*Sec[(e + f*x)/2]*Sec[e + f*x]^2*Sqrt[a*(1 + Sec[e + f*x])]*(30*Sqrt[2]*c
^2*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]]*Cos[e + f*x]^(5/2) + 2*(15*c^2 + 50*c*d
 + 24*d^2 + 2*d*(10*c + 9*d)*Cos[e + f*x] + (15*c^2 + 50*c*d + 18*d^2)*Cos[
2*(e + f*x)])*Sin[(e + f*x)/2]))/(30*f)
```

fricas [A] time = 0.50, size = 398, normalized size = 2.26

$$\left[\frac{15\left(ac^2\cos\left(fx+e\right)^3+ac^2\cos\left(fx+e\right)^2\right)\sqrt{-a}\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-}{\cos\left(fx+e\right)+1}\right.}{15\left(f\cos\left(fx+\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/15*(15*(a*c^2*cos(f*x + e)^3 + a*c^2*cos(f*x + e)^2)*sqrt(-a)*log((2*a*c
os(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
+ e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(3*a*d^2 +
(15*a*c^2 + 50*a*c*d + 18*a*d^2)*cos(f*x + e)^2 + (10*a*c*d + 9*a*d^2)*cos(
f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x
+ e)^3 + f*cos(f*x + e)^2), -2/15*(15*(a*c^2*cos(f*x + e)^3 + a*c^2*cos(f*x
 + e)^2)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e
)/(sqrt(a)*sin(f*x + e))) - (3*a*d^2 + (15*a*c^2 + 50*a*c*d + 18*a*d^2)*cos
(f*x + e)^2 + (10*a*c*d + 9*a*d^2)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^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((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^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
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able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)2*(2*((-1/450*(900*a^4*c^2*sign(cos(f*x+exp(1)))+900*a^4*d^2*sign(cos(f*x+
exp(1)))+3000*a^4*c*d*sign(cos(f*x+exp(1))))/sqrt(2)-1/450*(-450*a^4*c^2*si
gn(cos(f*x+exp(1)))-360*a^4*d^2*sign(cos(f*x+exp(1)))-1200*a^4*c*d*sign(cos
(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2/sqrt(2))*tan(1/2*(f*x+exp(1)))^2-1/4
50*(-450*a^4*c^2*sign(cos(f*x+exp(1)))-900*a^4*d^2*sign(cos(f*x+exp(1)))-18
00*a^4*c*d*sign(cos(f*x+exp(1))))/sqrt(2))/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+
a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^2*tan(1/2*(f*x+exp(1)))-1/2*a^2*sqrt(-a)*
c^2*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt
(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*
(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))
/abs(a))/f
```

maple [B] time = 1.67, size = 382, normalized size = 2.17

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(15\left(\cos^{2}\left(fx+e\right)\right)\sin\left(fx+e\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{5}{2}}\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{2}\,c^{2}+30\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^2,x)
```

```
[Out] -1/60/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(15*cos(f*x+e)^2*sin(f*x+e)*(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*2^(1/2)*c^2+30*cos(f*x+e)*sin(f*x+e)
*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*2^(1/2)*c^2+15*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(5/2)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^2*sin(f*x+e)+120*cos(f*x+e)^3*c^2+400*co
s(f*x+e)^3*c*d+144*cos(f*x+e)^3*d^2-120*cos(f*x+e)^2*c^2-320*cos(f*x+e)^2*c
*d-72*cos(f*x+e)^2*d^2-80*cos(f*x+e)*c*d-48*cos(f*x+e)*d^2-24*d^2)/cos(f*x+
e)^2/sin(f*x+e)*a
```

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((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{3/2}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))^2, x)
```

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

$$\int \left(a \left(\sec{\left(e + f x \right)} + 1\right)\right)^{\frac{3}{2}} \left(c + d \sec{\left(e + f x \right)}\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)*(c+d*sec(f*x+e))**2,x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)*(c + d*sec(e + f*x))**2, x)
```

3.156 $\int (a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))\,dx$

Optimal. Leaf size=105

$$\frac{2a^{3/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2a^2(3c+4d)\tan(e+fx)}{3f\sqrt{a\sec(e+fx)+a}}+\frac{2ad\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{3f}$$

```
[Out] 2*a^(3/2)*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f+2/3*a^2*(3*
c+4*d)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/3*a*d*(a+a*sec(f*x+e))^(1/2)*t
an(f*x+e)/f
```

Rubi [A] time = 0.15, antiderivative size = 105, 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 = {3917, 3915, 3774, 203, 3792}

$$\frac{2a^2(3c+4d)\tan(e+fx)}{3f\sqrt{a\sec(e+fx)+a}}+\frac{2a^{3/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2ad\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{3f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*a^(3/2)*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f + (
2*a^2*(3*c + 4*d)*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec[e + f*x]]) + (2*a*d*Sqr
t[a + a*Sec[e + f*x]]*Tan[e + f*x])/(3*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 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3792

```
Int[csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*b*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e + f*x]]), x] /; Free
Q[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3915

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_)), x_Symbol] :> Dist[c, Int[Sqrt[a + b*Csc[e + f*x]], x], x] + Dis
t[d, Int[Sqrt[a + b*Csc[e + f*x]]*Csc[e + f*x], x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rule 3917

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[(b*d*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m -
 1))/(f*m), x] + Dist[1/m, Int[(a + b*Csc[e + f*x])^(m - 1)*Simp[a*c*m + (b
*c*m + a*d*(2*m - 1))*Csc[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f},
 x] && NeQ[b*c - a*d, 0] && GtQ[m, 1] && EqQ[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))\,dx = \frac{2ad\sqrt{a+a\sec(e+fx)}\,\tan(e+fx)}{3f} + \frac{2}{3}\int \sqrt{a+a\sec(e+fx)}\,\Big($$

$$= \frac{2ad\sqrt{a+a\sec(e+fx)}\,\tan(e+fx)}{3f} + (ac)\int \sqrt{a+a\sec(e+fx)}$$

$$= \frac{2a^2(3c+4d)\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}} + \frac{2ad\sqrt{a+a\sec(e+fx)}\,\tan(e+fx)}{3f}$$

$$= \frac{2a^{3/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} + \frac{2a^2(3c+4d)\tan(e+fx)}{3f\sqrt{a+a\sec(e+fx)}} + \frac{2ad\sqrt{}}{}$$

Mathematica [A] time = 0.59, size = 102, normalized size = 0.97

$$\frac{a\sec\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{a(\sec(e+fx)+1)}\,\left(2\sin\left(\frac{1}{2}(e+fx)\right)((3c+5d)\cos(e+fx)+d)+3\sqrt{2}\,c\sin^{-1}\left(\sqrt{}\right.\right.}{3f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] (a*Sec[(e + f*x)/2]*Sec[e + f*x]*Sqrt[a*(1 + Sec[e + f*x])]*(3*Sqrt[2]*c*Ar
cSin[Sqrt[2]*Sin[(e + f*x)/2]]*Cos[e + f*x]^(3/2) + 2*(d + (3*c + 5*d)*Cos[
e + f*x])*Sin[(e + f*x)/2]))/(3*f)
```

fricas [A] time = 0.51, size = 316, normalized size = 3.01

$$\left[\frac{3\left(ac\cos\left(fx+e\right)^2+ac\cos\left(fx+e\right)\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\,\sqrt{-a}\,\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)+2}{3\left(f\cos\left(fx+e\right)^2+f\cos\left(fx+e\right)\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(a*c*cos(f*x + e)^2 + a*c*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x +
 e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(a*d + (3*a*c + 5*a
*d)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*
cos(f*x + e)^2 + f*cos(f*x + e)), -2/3*(3*(a*c*cos(f*x + e)^2 + a*c*cos(f*x
 + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/
(sqrt(a)*sin(f*x + e))) - (a*d + (3*a*c + 5*a*d)*cos(f*x + e))*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^2 + f*cos(f*x + e
))]
```

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((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
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able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)2*(2/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a
)*(-1/324*(162*sqrt(2)*a^3*c*sign(cos(f*x+exp(1)))+216*sqrt(2)*a^3*d*sign(c
os(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2-1/18*(-9*sqrt(2)*a^3*c*sign(cos(f*
x+exp(1)))-18*sqrt(2)*a^3*d*sign(cos(f*x+exp(1)))))*tan(1/2*(f*x+exp(1)))-1
/2*a^2*sqrt(-a)*c*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(
1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sq
rt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2
)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.54, size = 237, normalized size = 2.26

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(3\sin\left(fx+e\right)\cos\left(fx+e\right)\sqrt{2}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{3}{2}}c+3\,\mathrm{arcta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),x)
```

```
[Out] 1/6/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(3*sin(f*x+e)*cos(f*x+e)*2^(1/2)*
arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1
/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*c+3*arctanh(1/2*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*2^(1/2)*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(3/2)*c*sin(f*x+e)-12*cos(f*x+e)^2*c-20*cos(f*x+e)^2*d+12*c*
cos(f*x+e)+16*d*cos(f*x+e)+4*d)/cos(f*x+e)/sin(f*x+e)*a
```

maxima [B] time = 1.40, size = 998, normalized size = 9.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*((a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*
e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))*sin(1/2
*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f
*x + 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e)
 + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(1
/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arctan2(sin(2*f*x
 + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x
 + 2*e)))) + 1) - a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*co
s(2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arc
```

```
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(
2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
 + 1))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))) - 1) - a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2
*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e) + 1)), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x
 + 2*e) + 1)^(1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))
 + 1) + a*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x +
2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)), (
cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*cos
(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - 1))*(cos(2*f*x + 2*
e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*sqrt(a) + 4*(a*co
s(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(
2*f*x + 2*e), cos(2*f*x + 2*e))) - (a*cos(1/2*arctan2(sin(2*f*x + 2*e), cos
(2*f*x + 2*e))) - a)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1
)))*sqrt(a))*c/((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*
e) + 1)^(1/4)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x)),x)
[Out] int((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x)), x)
```

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

$$\int \left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\left(c+d\sec\left(e+fx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)*(c+d*sec(f*x+e)),x)
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)*(c + d*sec(e + f*x)), x)
```

3.157 $\int \frac{(a+a\sec(e+fx))^{3/2}}{c+d\sec(e+fx)}\,dx$

Optimal. Leaf size=110

$$\frac{2a^{3/2}(c-d)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\sqrt{a\sec(e+fx)+a}}\right)}{c\sqrt{d}f\sqrt{c+d}}+\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}$$

```
[Out] 2*a^(3/2)*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c/f+2*a^(3/2)*(
c-d)*arctan(a^(1/2)*d^(1/2)*tan(f*x+e)/(c+d)^(1/2)/(a+a*sec(f*x+e))^(1/2))/
c/f/d^(1/2)/(c+d)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3927, 3774, 203, 3967, 205}

$$\frac{2a^{3/2}(c-d)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\sqrt{a\sec(e+fx)+a}}\right)}{c\sqrt{d}f\sqrt{c+d}}+\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{cf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*a^(3/2)*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(c*f) +
 (2*a^(3/2)*(c - d)*ArcTan[(Sqrt[a]*Sqrt[d]*Tan[e + f*x])/(Sqrt[c + d]*Sqrt
[a + a*Sec[e + f*x]])])/(c*Sqrt[d]*Sqrt[c + d]*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 205

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

Rule 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3927

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)/(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_)), x_Symbol] :> Dist[a/c, Int[Sqrt[a + b*Csc[e + f*x]], x], x] +
 Dist[(b*c - a*d)/c, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]])/(c + d*Csc
[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
(EqQ[a^2 - b^2, 0] || EqQ[c^2 - d^2, 0])
```

Rule 3967

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/(c
sc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)), x_Symbol] :> Dist[(-2*b)/f, Subst[Int
[1/(b*c + a*d + d*x^2), x], x, (b*Cot[e + f*x])/Sqrt[a + b*Csc[e + f*x]]],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0
```

]

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{c+d\sec(e+fx)}\,dx = \frac{a\int\sqrt{a+a\sec(e+fx)}\,dx}{c} + \frac{(ac-ad)\int\frac{\sec(e+fx)\sqrt{a+a\sec(e+fx)}}{c+d\sec(e+fx)}\,dx}{c}$$
$$= -\frac{(2a^2)\,\mathrm{Subst}\left(\int\frac{1}{a+x^2}\,dx, x, -\frac{a\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} - \frac{(2a^2(c-d))\,\mathrm{Subst}\left(\int\frac{1}{ac+ad+dx^2}\,dx, x\right.}{cf}$$
$$= \frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{cf} + \frac{2a^{3/2}(c-d)\tan^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\sqrt{a+a\sec(e+fx)}}\right)}{c\sqrt{d}\sqrt{c+d}\,f}$$

Mathematica [A] time = 0.50, size = 135, normalized size = 1.23

$$\frac{\sqrt{2}\,a\sqrt{\cos(e+fx)}\sec\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(\sqrt{d}\sqrt{c+d}\sin^{-1}\left(\sqrt{2}\sin\left(\frac{1}{2}(e+fx)\right)\right)+(c-d)\tan^{-1}\left(\right.\right.}{c\sqrt{d}\,f\sqrt{c+d}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x]),x]
```

```
[Out] (Sqrt[2]*a*(Sqrt[d]*Sqrt[c + d]*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]] + (c - d)*
ArcTan[(Sqrt[2]*Sqrt[d]*Sin[(e + f*x)/2])/(Sqrt[c + d]*Sqrt[Cos[e + f*x]])]
)*Sqrt[Cos[e + f*x]]*Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])])/(c*Sqrt[d
]*Sqrt[c + d]*f)
```

fricas [A] time = 1.63, size = 731, normalized size = 6.65

$$\left[-\frac{(ac-ad)\sqrt{-\frac{a}{cd+d^2}}\log\left(\frac{2\left(cd+d^2\right)\sqrt{-\frac{a}{cd+d^2}}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)+(ac+2\,ad)\cos(fx+e)^2-ad+(ac+ad)\cos(fx+e)}{c\cos(fx+e)^2+(c+d)\cos(fx+e)+d}\right)-\sqrt{-a}\cdots}{cf}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [-((a*c - a*d)*sqrt(-a/(c*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2))
*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c +
 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2
+ (c + d)*cos(f*x + e) + d)) - sqrt(-a)*a*log((2*a*cos(f*x + e)^2 - 2*sqrt(
-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*c
os(f*x + e) - a)/(cos(f*x + e) + 1)))/(c*f), -(2*a^(3/2)*arctan(sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (a*c -
a*d)*sqrt(-a/(c*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2))*sqrt((a*c
os(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*co
s(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*
cos(f*x + e) + d)))/(c*f), -(2*(a*c - a*d)*sqrt(a/(c*d + d^2))*arctan((c +
d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)
```

```
/(a*sin(f*x + e))) - sqrt(-a)*a*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e
) - a)/(cos(f*x + e) + 1)))/(c*f), -2*((a*c - a*d)*sqrt(a/(c*d + d^2))*arct
an((c + d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(
f*x + e)/(a*sin(f*x + e))) + a^(3/2)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f
*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))))/(c*f)]
```

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((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)-32*sqrt(2)*a^2*sqrt
(-a)*a*(1/32*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))
^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/sqrt(2)/a/c/
abs(a)-1/16*(c-d)*atan(1/2*(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*
tan(1/2*(f*x+exp(1))))^2-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan
(1/2*(f*x+exp(1))))^2+a*c+3*a*d)/sqrt(2)/sqrt(-d^2-c*d)/a)/sqrt(2)/sqrt(-d^
2-c*d)/a^2/c)*sign(cos(f*x+exp(1)))/f
```

maple [B] time = 1.49, size = 864, normalized size = 7.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] -1/2/f*(2*((c+d)*(c-d))^(1/2)*(d/(c-d))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))+ln(2*((d/(c-d))^(1/2)*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(
1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)*
cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1
/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))*c-d*ln(2*((d/(c-d))^(1/2)*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(
1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)*
cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1
/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))-ln(-2*((d/(c-d))^(1/2)*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2
)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x+e)+d*sin(f*x+
e)-((c+d)*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)
*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d))*c+ln(-2*((d/(c-d))^(1/2)*(-2*co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)
*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e
)-((c+d)*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*
sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d))*d)*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*2^(1/2)*a/((c+d)*(c-d))^(1/2)/c
/(d/(c-d))^(1/2)
```

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

$$\int \frac{\left(a \sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{d \sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="maxima")
[Out] integrate((a*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c), x)
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{c+\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x)),x)
[Out] int((a + a/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x)), x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}{c+d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e)),x)
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)/(c + d*sec(e + f*x)), x)
```

3.158 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=229

$$\frac{a^{5/2}\left(c^2-3cd-2d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{c^2\sqrt{d}f(c+d)^{3/2}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^{5/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^2f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{\cdots}{cf(c\cdots}$$

```
[Out] a^2*(c-d)*tan(f*x+e)/c/(c+d)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*a^
(5/2)*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c^2/f/(a-a*sec(f*x
+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+a^(5/2)*(c^2-3*c*d-2*d^2)*arctanh(d^(1/2)
*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c^2/(c+d)^(3/2)/f/d
^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 151, 156, 63, 206, 208}

$$\frac{a^{5/2}\left(c^2-3cd-2d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{c^2\sqrt{d}f(c+d)^{3/2}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^{5/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^2f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{\cdots}{cf(c\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(5/2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^2*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (a^(5/2)*(c^2 - 3*c*d -
 2*d^2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*T
an[e + f*x])/(c^2*Sqrt[d]*(c + d)^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a +
 a*Sec[e + f*x]]) + (a^2*(c - d)*Tan[e + f*x])/(c*(c + d)*f*Sqrt[a + a*Sec[
e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 151

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_)), x_Symbol] :> Simp[((b*g - a*h)*(a + b*x)^(m +
1)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/((m + 1)*(b*c - a*d)*(b*e - a*f)),
x] + Dist[1/((m + 1)*(b*c - a*d)*(b*e - a*f)), Int[(a + b*x)^(m + 1)*(c + d
*x)^n*(e + f*x)^p*Simp[(a*d*f*g - b*(d*e + c*f)*g + b*c*e*h)*(m + 1) - (b*g
 - a*h)*(d*e*(n + 1) + c*f*(p + 1)) - d*f*(b*g - a*h)*(m + n + p + 3)*x, x]
, x], x] /; FreeQ[{a, b, c, d, e, f, g, h, n, p}, x] && LtQ[m, -1] && Integ
erQ[m]
```

Rule 156

```
Int[(((e_.) + (f_.)*(x_))^(p_)*((g_.) + (h_.)*(x_)))/(((a_.) + (b_.)*(x_))*
((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[(b*g - a*h)/(b*c - a*d), Int[(e +
f*x)^p/(a + b*x), x], x] - Dist[(d*g - c*h)/(b*c - a*d), Int[(e + f*x)^p/(c
 + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, h}, x]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^2}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{a+ax}{x\sqrt{a-ax}\,(c+dx)^2}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{a^2(c-d)\tan(e+fx)}{c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))} - \frac{(a\tan(e+fx))\,\text{Subst}\left(\int \frac{a^2(c+d)+}{x\sqrt{a-a}}\right.}{c(c+d)f\sqrt{a-a\sec(e+f}}$$

$$= \frac{a^2(c-d)\tan(e+fx)}{c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))} - \frac{\left(a^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-a}}\right.}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a}}$$

$$= \frac{a^2(c-d)\tan(e+fx)}{c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))} + \frac{\left(2a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{1-\frac{x^2}{a}}\right.}{c^2f\sqrt{a-a\sec(e+fx)}}$$

$$= \frac{2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{a^{5/2}\left(c^2-3cd-2d^2\right)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a}}{\sqrt{a}}\right.}{c^2\sqrt{d}\,(c+d)^{3/2}f\sqrt{a-a\sec(e+fx)}}$$

Mathematica [C] time = 24.92, size = 2862, normalized size = 12.50

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] ((d + c*Cos[e + f*x])^2*Sec[(e + f*x)/2]^3*Sec[e + f*x]*(a*(1 + Sec[e + f*x
]))^(3/2)*(((c - d)*Sin[(e + f*x)/2])/(2*c^2*(c + d)) + (-(c*d*Sin[(e + f*x
)/2]) + d^2*Sin[(e + f*x)/2])/(2*c^2*(c + d)*(d + c*Cos[e + f*x]))))/(f*(c
+ d*Sec[e + f*x])^2) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*(d + c*Cos[e
 + f*x])^2*(c*(3*c + d)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2
]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(
e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^2 - 3*c*d - 2*d^2)*
(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] -
```

d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sec[(e + f*x)/2]^3*((Cos[(e + f*x)/2]*Sqrt[Sec[e + f*x]])/(2*(c + d)*(d + c*Cos[e + f*x])) + (Cos[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]])/(4*(c + d)*(d + c*Cos[e + f*x])) + (d*Cos[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]])/(4*c*(c + d)*(d + c*Cos[e + f*x])))*Sec[e + f*x]*(a*(1 + Sec[e + f*x]))^(3/2)*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(c^2*(c + d)^2*f*(c + d*Sec[e + f*x])^2*((Sqrt[3 - 2*Sqrt[2]]*(3 + 2*Sqrt[2])*(c*(3*c + d)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^2 - 3*c*d - 2*d^2)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Tan[(e + f*x)/4]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(4*c^2*(c + d)^2*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]) - (Sqrt[3 - 2*Sqrt[2]]*(-3 + 2*Sqrt[2])*(c*(3*c + d)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^2 - 3*c*d - 2*d^2)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Tan[(e + f*x)/4]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(4*c^2*(c + d)^2*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]) + (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]*(c*(3*c + d)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^2 - 3*c*d - 2*d^2)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Sin[(e + f*x)/4]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(2*c^2*(c + d)^2) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*(c*(3*c + d)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 4*(c + d)^2*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^2 - 3*c*d - 2*d^2)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sec[e + f*x]^(3/2)*Sin[e + f*x]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(2*c^2*(c + d)^2) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*Sqrt[Sec[e + f*x]]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*((c*(3*c + d)*Sec[(e + f*x)/4]^2)/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]) - ((c + d)^2*Sec[(e + f*x)/4]^2)/(Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2]))) - (c^2 - 3*c*d - 2*d^2)*(Sec[(e + f*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 + ((-3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2)/((3 - 2*Sqrt[2])*(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)))) + Sec[(e + f*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2)

```
/((3 - 2*Sqrt[2])*(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d)))))))/(c^2*(c + d)
^2)))
```

fricas [A]   time = 7.40, size = 1640, normalized size = 7.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(a*c^2 - a*c*d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e
)*sin(f*x + e) - (a*c^2*d - 3*a*c*d^2 - 2*a*d^3 + (a*c^3 - 3*a*c^2*d - 2*a*
c*d^2)*cos(f*x + e)^2 + (a*c^3 - 2*a*c^2*d - 5*a*c*d^2 - 2*a*d^3)*cos(f*x +
 e))*sqrt(-a/(c*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2))*sqrt((a*c
os(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*co
s(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*
cos(f*x + e) + d)) + 2*(a*c*d + a*d^2 + (a*c^2 + a*c*d)*cos(f*x + e)^2 + (a
*c^2 + 2*a*c*d + a*d^2)*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*
sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)
+ a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/((c^4 + c^3*d)*f*cos(f*x + e)^2
+ (c^4 + 2*c^3*d + c^2*d^2)*f*cos(f*x + e) + (c^3*d + c^2*d^2)*f), 1/2*(2*(
a*c^2 - a*c*d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x
 + e) - 4*(a*c*d + a*d^2 + (a*c^2 + a*c*d)*cos(f*x + e)^2 + (a*c^2 + 2*a*c*
d + a*d^2)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - (a*c^2*d - 3*a*c*d^2 - 2*a*d^3
+ (a*c^3 - 3*a*c^2*d - 2*a*c*d^2)*cos(f*x + e)^2 + (a*c^3 - 2*a*c^2*d - 5*a
*c*d^2 - 2*a*d^3)*cos(f*x + e))*sqrt(-a/(c*d + d^2))*log((2*(c*d + d^2)*sqr
t(-a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(
f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(
c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) + d)))/((c^4 + c^3*d)*f*cos(f*x + e
)^2 + (c^4 + 2*c^3*d + c^2*d^2)*f*cos(f*x + e) + (c^3*d + c^2*d^2)*f), ((a*
c^2 - a*c*d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x +
 e) - (a*c^2*d - 3*a*c*d^2 - 2*a*d^3 + (a*c^3 - 3*a*c^2*d - 2*a*c*d^2)*cos(
f*x + e)^2 + (a*c^3 - 2*a*c^2*d - 5*a*c*d^2 - 2*a*d^3)*cos(f*x + e))*sqrt(a
/(c*d + d^2))*arctan((c + d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*cos(f*x + e)/(a*sin(f*x + e))) + (a*c*d + a*d^2 + (a*c^2 + a*
c*d)*cos(f*x + e)^2 + (a*c^2 + 2*a*c*d + a*d^2)*cos(f*x + e))*sqrt(-a)*log(
(2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/((c^4 +
c^3*d)*f*cos(f*x + e)^2 + (c^4 + 2*c^3*d + c^2*d^2)*f*cos(f*x + e) + (c^3*d
 + c^2*d^2)*f), ((a*c^2 - a*c*d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) - (a*c^2*d - 3*a*c*d^2 - 2*a*d^3 + (a*c^3 - 3*a*c^2
*d - 2*a*c*d^2)*cos(f*x + e)^2 + (a*c^3 - 2*a*c^2*d - 5*a*c*d^2 - 2*a*d^3)*
cos(f*x + e))*sqrt(a/(c*d + d^2))*arctan((c + d)*sqrt(a/(c*d + d^2))*sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(a*sin(f*x + e))) - 2*(a*c*d
 + a*d^2 + (a*c^2 + a*c*d)*cos(f*x + e)^2 + (a*c^2 + 2*a*c*d + a*d^2)*cos(f
*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e
)/(sqrt(a)*sin(f*x + e))))/((c^4 + c^3*d)*f*cos(f*x + e)^2 + (c^4 + 2*c^3*d
 + c^2*d^2)*f*cos(f*x + e) + (c^3*d + c^2*d^2)*f)]
```

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((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^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: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)4*((-1374389
53472*a^3*sqrt(-a)*c*sign(cos(f*x+exp(1)))+137438953472*a^3*sqrt(-a)*d*sign
(cos(f*x+exp(1)))-137438953472*a^2*sqrt(-a)*c*(sqrt(-a*tan(1/2*(f*x+exp(1))
)^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1)))-412316860416
*a^2*sqrt(-a)*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+e
xp(1))))^2*sign(cos(f*x+exp(1))))/(137438953472*sqrt(2)*c^2+137438953472*sq
rt(2)*c*d)/(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp
(1))))^4-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)
)))^4+2*a*c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1
))))^2+6*a*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(
1))))^2+a^2*c-a^2*d)+1/549755813888*(377789318629571617095 68*a^2*sqrt(-a)*c
^2*sign(cos(f*x+exp(1)))-755578637259143234191 36*a^2*sqrt(-a)*d^2*sign(cos(
f*x+exp(1)))-113336795588871485128704*a^2*sqrt(-a)*c*d*sign(cos(f*x+exp(1))
))*atan(1/2*(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+ex
p(1))))^2-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1
))))^2+a*c+3*a*d)/sqrt(2)/sqrt(-d^2-c*d)/a)/sqrt(2)/sqrt(-d^2-c*d)/a/(13743
8953472*sqrt(2)*c^3+137438953472*sqrt(2)*c^2*d)-1/4*a^2*sqrt(-a)*sign(cos(f
*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(
f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^
2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c^2/abs(a))/f
```

maple [**B**] time = 3.12, size = 62283, normalized size = 271.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^2,x)
```

```
[Out] result too large to display
```

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((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^2, x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}{\left(c+d\sec\left(e+fx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e))**2,x)
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)/(c + d*sec(e + f*x))**2, x)
```

3.159 $\int \frac{(a+a\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=310

$$\frac{2a^{5/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^3f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{a^{5/2}\left(3c^3-15c^2d-20cd^2-8d^3\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+}}{\sqrt{a}\sqrt{c+d}}\right.}{4c^3\sqrt{d}f(c+d)^{5/2}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 1/2*a^2*(c-d)*tan(f*x+e)/c/(c+d)/f/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2
)+1/4*a^2*(3*c^2-7*c*d-4*d^2)*tan(f*x+e)/c^2/(c+d)^2/f/(c+d*sec(f*x+e))/(a+
a*sec(f*x+e))^(1/2)+2*a^(5/2)*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f
*x+e)/c^3/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+1/4*a^(5/2)*(3*c^
3-15*c^2*d-20*c*d^2-8*d^3)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(
c+d)^(1/2))*tan(f*x+e)/c^3/(c+d)^(5/2)/f/d^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+
a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 151, 156, 63, 206, 208}

$$\frac{a^2\left(3c^2-7cd-4d^2\right)\tan(e+fx)}{4c^2f(c+d)^2\sqrt{a\sec(e+fx)+a}\,(c+d\sec(e+fx))}+\frac{a^{5/2}\left(-15c^2d+3c^3-20cd^2-8d^3\right)\tan(e+fx)\tanh^{-1}\left(\sqrt{a}\right.}{4c^3\sqrt{d}f(c+d)^{5/2}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+f}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(5/2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^3*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (a^(5/2)*(3*c^3 - 15*c^
2*d - 20*c*d^2 - 8*d^3)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]
*Sqrt[c + d])]*Tan[e + f*x])/(4*c^3*Sqrt[d]*(c + d)^(5/2)*f*Sqrt[a - a*Sec[
e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (a^2*(c - d)*Tan[e + f*x])/(2*c*(c +
d)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^2) + (a^2*(3*c^2 - 7*c*d
 - 4*d^2)*Tan[e + f*x])/(4*c^2*(c + d)^2*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*
Sec[e + f*x]))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 151

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_)), x_Symbol] :> Simp[((b*g - a*h)*(a + b*x)^(m +
1)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/((m + 1)*(b*c - a*d)*(b*e - a*f)),
x] + Dist[1/((m + 1)*(b*c - a*d)*(b*e - a*f)), Int[(a + b*x)^(m + 1)*(c + d
*x)^n*(e + f*x)^p*Simp[(a*d*f*g - b*(d*e + c*f)*g + b*c*e*h)*(m + 1) - (b*g
 - a*h)*(d*e*(n + 1) + c*f*(p + 1)) - d*f*(b*g - a*h)*(m + n + p + 3)*x, x]
, x], x] /; FreeQ[{a, b, c, d, e, f, g, h, n, p}, x] && LtQ[m, -1] && Integ
erQ[m]
```

Rule 156

```
Int[(((e_.) + (f_.)*(x_))^(p_)*((g_.) + (h_.)*(x_)))/(((a_.) + (b_.)*(x_))*
((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[(b*g - a*h)/(b*c - a*d), Int[(e +
```

```
f*x)^p/(a + b*x), x], x] - Dist[(d*g - c*h)/(b*c - a*d), Int[(e + f*x)^p/(c
 + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, g, h}, x]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^3}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{a+ax}{x\sqrt{a-ax}\,(c+dx)^3}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{a^2(c-d)\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} - \frac{(a\tan(e+fx))\,\text{Subst}\left(\int \frac{2a^2(c\cdots}{x\sqrt{a\cdots}}\right.}{2c(c+d)f\sqrt{a-a\sec(e\cdots}}$$

$$= \frac{a^2(c-d)\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} + \frac{a^2\left(3c^2-7cd-4d^2\right)\cdots}{4c^2(c+d)^2f\sqrt{a+a\sec(e+f\cdots}}$$

$$= \frac{a^2(c-d)\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} + \frac{a^2\left(3c^2-7cd-4d^2\right)\cdots}{4c^2(c+d)^2f\sqrt{a+a\sec(e+f\cdots}}$$

$$= \frac{a^2(c-d)\tan(e+fx)}{2c(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} + \frac{a^2\left(3c^2-7cd-4d^2\right)\cdots}{4c^2(c+d)^2f\sqrt{a+a\sec(e+f\cdots}}$$

$$= \frac{2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{a^{5/2}\left(3c^3-15c^2d-20cd^2-8d^3\right)\tanh\cdots}{4c^3\sqrt{d}\,(c+d)^{5/2}f\sqrt{a-a\sec(e\cdots}}$$

Mathematica [C] time = 24.70, size = 3166, normalized size = 10.21

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + a*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] ((d + c*Cos[e + f*x])^3*Sec[(e + f*x)/2]^3*Sec[e + f*x]^2*(a*(1 + Sec[e + f
*x]))^(3/2)*(-1/8*((-5*c^2 + 7*c*d + 6*d^2)*Sin[(e + f*x)/2])/(c^3*(c + d)^
```

2) + (c*d^2*Sin[(e + f*x)/2] - d^3*Sin[(e + f*x)/2])/(4*c^3*(c + d)*(d + c*
Cos[e + f*x])^2) + (-7*c^2*d*Sin[(e + f*x)/2] + 7*c*d^2*Sin[(e + f*x)/2] +
8*d^3*Sin[(e + f*x)/2])/(8*c^3*(c + d)^2*(d + c*Cos[e + f*x]))))/(f*(c + d*
Sec[e + f*x])^3) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*(d + c*Cos[e + f
x])^3(c*(11*c^2 + 9*c*d + 4*d^2)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3
 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2],
ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (3*c^3 - 1
5*c^2*d - 20*c*d^2 - 8*d^3)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c +
 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2
]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqr
t[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17
 - 12*Sqrt[2]]))*Sec[(e + f*x)/2]^3*((7*Cos[(e + f*x)/2]*Sqrt[Sec[e + f*x]]
)/(16*(c + d)^2*(d + c*Cos[e + f*x])) + (d*Cos[(e + f*x)/2]*Sqrt[Sec[e + f*
x]])/(16*c*(c + d)^2*(d + c*Cos[e + f*x])) + (Cos[(3*(e + f*x))/2]*Sqrt[Sec
[e + f*x]])/(4*(c + d)^2*(d + c*Cos[e + f*x])) + (d*Cos[(3*(e + f*x))/2]*Sq
rt[Sec[e + f*x]])/(2*c*(c + d)^2*(d + c*Cos[e + f*x])) + (d^2*Cos[(3*(e + f
*x))/2]*Sqrt[Sec[e + f*x]])/(4*c^2*(c + d)^2*(d + c*Cos[e + f*x])))*Sec[e +
 f*x]^2*(a*(1 + Sec[e + f*x]))^(3/2)*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x
)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(4*c^3*(c + d)^3*f*(c
 + d*Sec[e + f*x])^3*((Sqrt[3 - 2*Sqrt[2]]*(3 + 2*Sqrt[2])*(c*(11*c^2 + 9*c
*d + 4*d^2)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12
Sqrt[2]] - 16(c + d)^3*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]
/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (3*c^3 - 15*c^2*d - 20*c*d^2 - 8*
d^3)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c -
d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] +
 EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] +
d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[S
ec[e + f*x]]*Tan[(e + f*x)/4]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]
)/(16*c^3*(c + d)^3*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]) - (Sqrt[3
 - 2*Sqrt[2]]*(-3 + 2*Sqrt[2])*(c*(11*c^2 + 9*c*d + 4*d^2)*EllipticF[ArcSin
[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*(c + d)^3*Ell
ipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 -
12*Sqrt[2]] - (3*c^3 - 15*c^2*d - 20*c*d^2 - 8*d^3)*(EllipticPi[-(((-3 + 2*
Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f
*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2]
)*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/
Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Tan[(e + f*x)/4
]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(16*c^3*(c + d)^3*Sqrt[1 +
(-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]) + (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/
4]*(c*(11*c^2 + 9*c*d + 4*d^2)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2
*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2], ArcS
in[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (3*c^3 - 15*c^
2*d - 20*c*d^2 - 8*d^3)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*S
qrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]],
 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]
Sqrt[c(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 1
2*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Sin[(e + f*x)/4]*Sqrt[1 + (-3 + 2*Sqrt[2])*
Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(8*c^3*(c
 + d)^3) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*(c*(11*c^2 + 9*c*d + 4*d
^2)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]
] - 16*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3
- 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (3*c^3 - 15*c^2*d - 20*c*d^2 - 8*d^3)*(El
lipticPi[-(((-3 + 2*Sqrt[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)
), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + Ellipti
cPi[((-3 + 2*Sqrt[2])*(c + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcS
in[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sec[e + f*x]^(
3/2)*Sin[e + f*x]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3
 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(8*c^3*(c + d)^3) - (Sqrt[3 - 2*Sqrt[2]]
*Cos[(e + f*x)/4]^2*Sqrt[Sec[e + f*x]]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f

```
*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*((c*(11*c^2 + 9*c*d
+ 4*d^2)*Sec[(e + f*x)/4]^2)/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/
4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 -
2*Sqrt[2])]) - (4*(c + d)^3*Sec[(e + f*x)/4]^2)/(Sqrt[3 - 2*Sqrt[2]]*Sqrt[1
 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e +
 f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3
- 2*Sqrt[2]))) - (3*c^3 - 15*c^2*d - 20*c*d^2 - 8*d^3)*(Sec[(e + f*x)/4]^2/
(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1
- ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 + ((-3 + 2*Sqr
t[2])*(c + d)*Tan[(e + f*x)/4]^2)/((3 - 2*Sqrt[2])*(3*c + 2*Sqrt[2]*Sqrt[c*
(c - d)] - d)))) + Sec[(e + f*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(
e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]
^2)/(3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2)/((3
 - 2*Sqrt[2])*(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d)))))))/(4*c^3*(c + d)^3
)))
```

fricas [B] time = 20.44, size = 2729, normalized size = 8.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [-1/8*((3*a*c^3*d^2 - 15*a*c^2*d^3 - 20*a*c*d^4 - 8*a*d^5 + (3*a*c^5 - 15*a
*c^4*d - 20*a*c^3*d^2 - 8*a*c^2*d^3)*cos(f*x + e)^3 + (3*a*c^5 - 9*a*c^4*d
- 50*a*c^3*d^2 - 48*a*c^2*d^3 - 16*a*c*d^4)*cos(f*x + e)^2 + (6*a*c^4*d - 2
7*a*c^3*d^2 - 55*a*c^2*d^3 - 36*a*c*d^4 - 8*a*d^5)*cos(f*x + e))*sqrt(-a/(c
*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a
)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^2 -
a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) +
d)) - 8*(a*c^2*d^2 + 2*a*c*d^3 + a*d^4 + (a*c^4 + 2*a*c^3*d + a*c^2*d^2)*co
s(f*x + e)^3 + (a*c^4 + 4*a*c^3*d + 5*a*c^2*d^2 + 2*a*c*d^3)*cos(f*x + e)^2
 + (2*a*c^3*d + 5*a*c^2*d^2 + 4*a*c*d^3 + a*d^4)*cos(f*x + e))*sqrt(-a)*log
((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*c
os(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 2*((5*
a*c^4 - 7*a*c^3*d - 6*a*c^2*d^2)*cos(f*x + e)^2 + (3*a*c^3*d - 7*a*c^2*d^2
- 4*a*c*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x
+ e))/((c^7 + 2*c^6*d + c^5*d^2)*f*cos(f*x + e)^3 + (c^7 + 4*c^6*d + 5*c^5*
d^2 + 2*c^4*d^3)*f*cos(f*x + e)^2 + (2*c^6*d + 5*c^5*d^2 + 4*c^4*d^3 + c^3*
d^4)*f*cos(f*x + e) + (c^5*d^2 + 2*c^4*d^3 + c^3*d^4)*f), -1/8*(16*(a*c^2*d
^2 + 2*a*c*d^3 + a*d^4 + (a*c^4 + 2*a*c^3*d + a*c^2*d^2)*cos(f*x + e)^3 + (
a*c^4 + 4*a*c^3*d + 5*a*c^2*d^2 + 2*a*c*d^3)*cos(f*x + e)^2 + (2*a*c^3*d +
5*a*c^2*d^2 + 4*a*c*d^3 + a*d^4)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (3*a*c^3*
d^2 - 15*a*c^2*d^3 - 20*a*c*d^4 - 8*a*d^5 + (3*a*c^5 - 15*a*c^4*d - 20*a*c^
3*d^2 - 8*a*c^2*d^3)*cos(f*x + e)^3 + (3*a*c^5 - 9*a*c^4*d - 50*a*c^3*d^2 -
 48*a*c^2*d^3 - 16*a*c*d^4)*cos(f*x + e)^2 + (6*a*c^4*d - 27*a*c^3*d^2 - 55
*a*c^2*d^3 - 36*a*c*d^4 - 8*a*d^5)*cos(f*x + e))*sqrt(-a/(c*d + d^2))*log((
2*(c*d + d^2)*sqrt(-a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*
cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d
)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) + d)) - 2*((5*a*c^
4 - 7*a*c^3*d - 6*a*c^2*d^2)*cos(f*x + e)^2 + (3*a*c^3*d - 7*a*c^2*d^2 - 4*
a*c*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e)
)/((c^7 + 2*c^6*d + c^5*d^2)*f*cos(f*x + e)^3 + (c^7 + 4*c^6*d + 5*c^5*d^2
+ 2*c^4*d^3)*f*cos(f*x + e)^2 + (2*c^6*d + 5*c^5*d^2 + 4*c^4*d^3 + c^3*d^4)
*f*cos(f*x + e) + (c^5*d^2 + 2*c^4*d^3 + c^3*d^4)*f), -1/4*((3*a*c^3*d^2 -
15*a*c^2*d^3 - 20*a*c*d^4 - 8*a*d^5 + (3*a*c^5 - 15*a*c^4*d - 20*a*c^3*d^2
- 8*a*c^2*d^3)*cos(f*x + e)^3 + (3*a*c^5 - 9*a*c^4*d - 50*a*c^3*d^2 - 48*a*
c^2*d^3 - 16*a*c*d^4)*cos(f*x + e)^2 + (6*a*c^4*d - 27*a*c^3*d^2 - 55*a*c^2
*d^3 - 36*a*c*d^4 - 8*a*d^5)*cos(f*x + e))*sqrt(a/(c*d + d^2))*arctan((c +
```

```
d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)
/(a*sin(f*x + e))) - 4*(a*c^2*d^2 + 2*a*c*d^3 + a*d^4 + (a*c^4 + 2*a*c^3*d
+ a*c^2*d^2)*cos(f*x + e)^3 + (a*c^4 + 4*a*c^3*d + 5*a*c^2*d^2 + 2*a*c*d^3)
*cos(f*x + e)^2 + (2*a*c^3*d + 5*a*c^2*d^2 + 4*a*c*d^3 + a*d^4)*cos(f*x + e
))*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/
cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e)
 + 1)) - ((5*a*c^4 - 7*a*c^3*d - 6*a*c^2*d^2)*cos(f*x + e)^2 + (3*a*c^3*d -
 7*a*c^2*d^2 - 4*a*c*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*sin(f*x + e))/((c^7 + 2*c^6*d + c^5*d^2)*f*cos(f*x + e)^3 + (c^7 + 4*c
^6*d + 5*c^5*d^2 + 2*c^4*d^3)*f*cos(f*x + e)^2 + (2*c^6*d + 5*c^5*d^2 + 4*c
^4*d^3 + c^3*d^4)*f*cos(f*x + e) + (c^5*d^2 + 2*c^4*d^3 + c^3*d^4)*f), -1/4
*((3*a*c^3*d^2 - 15*a*c^2*d^3 - 20*a*c*d^4 - 8*a*d^5 + (3*a*c^5 - 15*a*c^4*
d - 20*a*c^3*d^2 - 8*a*c^2*d^3)*cos(f*x + e)^3 + (3*a*c^5 - 9*a*c^4*d - 50*
a*c^3*d^2 - 48*a*c^2*d^3 - 16*a*c*d^4)*cos(f*x + e)^2 + (6*a*c^4*d - 27*a*c
^3*d^2 - 55*a*c^2*d^3 - 36*a*c*d^4 - 8*a*d^5)*cos(f*x + e))*sqrt(a/(c*d + d
^2))*arctan((c + d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*cos(f*x + e)/(a*sin(f*x + e))) + 8*(a*c^2*d^2 + 2*a*c*d^3 + a*d^4 + (a
*c^4 + 2*a*c^3*d + a*c^2*d^2)*cos(f*x + e)^3 + (a*c^4 + 4*a*c^3*d + 5*a*c^2
*d^2 + 2*a*c*d^3)*cos(f*x + e)^2 + (2*a*c^3*d + 5*a*c^2*d^2 + 4*a*c*d^3 + a
*d^4)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*
cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - ((5*a*c^4 - 7*a*c^3*d - 6*a*c^2*d^2)
*cos(f*x + e)^2 + (3*a*c^3*d - 7*a*c^2*d^2 - 4*a*c*d^3)*cos(f*x + e))*sqrt(
(a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/((c^7 + 2*c^6*d + c^5*d^2)
*f*cos(f*x + e)^3 + (c^7 + 4*c^6*d + 5*c^5*d^2 + 2*c^4*d^3)*f*cos(f*x + e)^
2 + (2*c^6*d + 5*c^5*d^2 + 4*c^4*d^3 + c^3*d^4)*f*cos(f*x + e) + (c^5*d^2 +
 2*c^4*d^3 + c^3*d^4)*f)]
```

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((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^3,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)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: (4*pi/x/
2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check s
ign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unab
le to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-
4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign:
(4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
 check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/
x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi
/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)4*((6189700196
426901374495621120*a^5*sqrt(-a)*c^4*sign(cos(f*x+exp(1)))-49517601571415210
99596496896*a^5*sqrt(-a)*d^4*sign(cos(f*x+exp(1)))+61897001964269013744956
```

```
1120*a^2*sqrt(-a)*c^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))+14855280471424563298789490688*a^2*sq
rt(-a)*d^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)
)))^6*sign(cos(f*x+exp(1)))+18569100589280704123486863360*a^3*sqrt(-a)*c^4*
(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(
cos(f*x+exp(1)))-94083442985688900892333441024*a^3*sqrt(-a)*d^4*(sqrt(-a*ta
n(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp
(1)))+18569100589280704123486863360*a^4*sqrt(-a)*c^4*(sqrt(-a*tan(1/2*(f*x+
exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1)))+44565
841414273689896368472064*a^4*sqrt(-a)*d^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+
a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1)))+371382011785614O
824697372672*a^5*sqrt(-a)*c*d^3*sign(cos(f*x+exp(1)))+136173404321391830238
90366464*a^5*sqrt(-a)*c^2*d^2*sign(cos(f*x+exp(1)))-185691005892807041234867
863360*a^5*sqrt(-a)*c^3*d*sign(cos(f*x+exp(1)))-123794003928538027489912422
4*a^2*sqrt(-a)*c*d^3*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(
f*x+exp(1))))^6*sign(cos(f*x+exp(1)))-35900261139276027972074602496*a^2*sqr
t(-a)*c^2*d^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp
(1))))^6*sign(cos(f*x+exp(1)))+16093220510709943573688614912*a^2*sqrt(-a)*c
^3*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6*
sign(cos(f*x+exp(1)))-16712190530352633711381770240*a^3*sqrt(-a)*c*d^3*(sq
rt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos
(f*x+exp(1)))+40852021296417549071671099392*a^3*sqrt(-a)*c^2*d^2*(sqrt(-a*t
an(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+ex
p(1)))+43327901374988309621469347840*a^3*sqrt(-a)*c^3*d*(sqrt(-a*tan(1/2*(f
*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1)))+35
900261139276027972074602496*a^4*sqrt(-a)*c*d^3*(sqrt(-a*tan(1/2*(f*x+exp(1)
))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1)))-10770078341
7828083916223807488*a^4*sqrt(-a)*c^2*d^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a
)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1)))+86655802749976619
24293869568*a^4*sqrt(-a)*c^3*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)
*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1))))/(c*(sqrt(-a*tan(1/2*(f*x+e
xp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4-d*(sqrt(-a*tan(1/2*(f*x+exp(
1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4+2*a*c*(sqrt(-a*tan(1/2*(f*x+exp
(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+6*a*d*(sqrt(-a*tan(1/2*(f*x+ex
p(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a^2*c-a^2*d)^2/(-495176015714
1521099596496896*sqrt(2)*c^5+4951760157141521099596496896*sqrt(2)*c^2*d^3+4
951760157141521099596496896*sqrt(2)*c^3*d^2-4951760157141521099596496896*sq
rt(2)*c^4*d)+1/19807040628566084398385987584*(36779892980781332600600328651
6074204068497389324064522224*a^2*sqrt(-a)*c^3*sign(cos(f*x+exp(1)))-98079714
6154168869349342097376197877515993038197505392644*a^2*sqrt(-a)*d^3*sign(cos(
f*x+exp(1)))-245199286538542217337335524344049469378998259549376348160*a^2*
sqrt(-a)*c*d^2*sign(cos(f*x+exp(1)))-18389946490390666300300164325803710203
4248694662032261120*a^2*sqrt(-a)*c^2*d*sign(cos(f*x+exp(1))))*atan(1/2*(c*(
sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-d*(sqr
t(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a*c+3*a*d
)/sqrt(2)/sqrt(-d^2-c*d)/a)/sqrt(2)/sqrt(-d^2-c*d)/a/(495176015714152109959
6496896*sqrt(2)*c^5+4951760157141521099596496896*sqrt(2)*c^3*d^2+9903520314
283042199192993792*sqrt(2)*c^4*d)-1/4*a^2*sqrt(-a)*sign(cos(f*x+exp(1)))*ln
(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^
2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*
tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c^3/abs(a))/f
```

maple [B] time = 11.53, size = 234091, normalized size = 755.13

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^3,x)
```

```
[Out] result too large to display
```

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((a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^3,x)
[Out] int((a + a/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^3, x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}{\left(c+d\sec\left(e+fx\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e))**3,x)
[Out] Integral((a*(sec(e + f*x) + 1))**(3/2)/(c + d*sec(e + f*x))**3, x)
```

3.160 $\int (a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^3\,dx$

Optimal. Leaf size=336

$$\frac{2a^{7/2}c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a\sec(e+fx)+a}\sqrt{a-a\sec(e+fx)}}-\frac{2\left(c^3+12c^2d+24cd^2+12d^3\right)\tan(e+fx)\left(a^3-a^3\sec(e+fx)\right)}{3f\sqrt{a\sec(e+fx)+a}}+\frac{2a^3}{}$$

```
[Out] 2*a^3*(3*c^3+12*c^2*d+12*c*d^2+4*d^3)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2
/5*a*d*(3*c^2+15*c*d+13*d^2)*(a-a*sec(f*x+e))^2*tan(f*x+e)/f/(a+a*sec(f*x+e
))^(1/2)-6/7*d^2*(c+2*d)*(a-a*sec(f*x+e))^3*tan(f*x+e)/f/(a+a*sec(f*x+e))^(
1/2)+2/9*d^3*(a-a*sec(f*x+e))^4*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)-2/3*(
c^3+12*c^2*d+24*c*d^2+12*d^3)*(a^3-a^3*sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*
x+e))^(1/2)+2*a^(7/2)*c^3*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e
)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 336, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {3940, 180, 63, 206}

$$-\frac{2\left(12c^2d+c^3+24cd^2+12d^3\right)\tan(e+fx)\left(a^3-a^3\sec(e+fx)\right)}{3f\sqrt{a\sec(e+fx)+a}}+\frac{2a^3\left(12c^2d+3c^3+12cd^2+4d^3\right)\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^3*(3*c^3 + 12*c^2*d + 12*c*d^2 + 4*d^3)*Tan[e + f*x])/(f*Sqrt[a + a*Se
c[e + f*x]]) + (2*a^(7/2)*c^3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan
[e + f*x])/(f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (2*a*d*(
3*c^2 + 15*c*d + 13*d^2)*(a - a*Sec[e + f*x])^2*Tan[e + f*x])/(5*f*Sqrt[a +
 a*Sec[e + f*x]]) - (6*d^2*(c + 2*d)*(a - a*Sec[e + f*x])^3*Tan[e + f*x])/(
7*f*Sqrt[a + a*Sec[e + f*x]]) + (2*d^3*(a - a*Sec[e + f*x])^4*Tan[e + f*x])
/(9*a*f*Sqrt[a + a*Sec[e + f*x]]) - (2*(c^3 + 12*c^2*d + 24*c*d^2 + 12*d^3)
*(a^3 - a^3*Sec[e + f*x])*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^3\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(a+ax)^2(c+dx)^3}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{a^2\left(3c^3+12c^2d+12cd^2+4d^3\right)}{\sqrt{a-ax}} + \frac{a^2c^3}{x\sqrt{a-ax}}\right.\right.}{}$$

$$= \frac{2a^3\left(3c^3+12c^2d+12cd^2+4d^3\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2ad\left(3c^2+15\right.}{}$$

$$= \frac{2a^3\left(3c^3+12c^2d+12cd^2+4d^3\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2ad\left(3c^2+15\right.}{}$$

$$= \frac{2a^3\left(3c^3+12c^2d+12cd^2+4d^3\right)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2a^{7/2}c^3\tanh}{f\sqrt{a-a\sec}}$$

Mathematica [A] time = 6.50, size = 286, normalized size = 0.85

$$\frac{a^2\sec\left(\frac{1}{2}(e+fx)\right)\sec^4(e+fx)\sqrt{a(\sec(e+fx)+1)}\left(2520\sqrt{2}\,c^3\sin^{-1}\left(\sqrt{2}\sin\left(\frac{1}{2}(e+fx)\right)\right)\cos^{\frac{9}{2}}(e+fx)+2\,\text{s}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (a^2*Sec[(e + f*x)/2]*Sec[e + f*x]^4*Sqrt[a*(1 + Sec[e + f*x])]*(2520*Sqrt[
2]*c^3*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]]*Cos[e + f*x]^(9/2) + 2*(2520*c^3 +
8883*c^2*d + 8370*c*d^2 + 2908*d^3 + (630*c^3 + 5292*c^2*d + 7290*c*d^2 + 2
792*d^3)*Cos[e + f*x] + 4*(840*c^3 + 2898*c^2*d + 2610*c*d^2 + 803*d^3)*Cos
[2*(e + f*x)] + 210*c^3*Cos[3*(e + f*x)] + 1764*c^2*d*Cos[3*(e + f*x)] + 20
70*c*d^2*Cos[3*(e + f*x)] + 584*d^3*Cos[3*(e + f*x)] + 840*c^3*Cos[4*(e + f
*x)] + 2709*c^2*d*Cos[4*(e + f*x)] + 2070*c*d^2*Cos[4*(e + f*x)] + 584*d^3*
Cos[4*(e + f*x)])*Sin[(e + f*x)/2]))/(2520*f)
```

fricas [A] time = 0.52, size = 620, normalized size = 1.85

$$\left[\frac{315\left(a^2c^3\cos\left(fx+e\right)^5+a^2c^3\cos\left(fx+e\right)^4\right)\sqrt{-a}\,\log\left(\frac{2\,a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx\right.}{\cos\left(fx+e\right)+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/315*(315*(a^2*c^3*cos(f*x + e)^5 + a^2*c^3*cos(f*x + e)^4)*sqrt(-a)*log(
(2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(35*a
^2*d^3 + (840*a^2*c^3 + 2709*a^2*c^2*d + 2070*a^2*c*d^2 + 584*a^2*d^3)*cos(
f*x + e)^4 + (105*a^2*c^3 + 882*a^2*c^2*d + 1035*a^2*c*d^2 + 292*a^2*d^3)*c
os(f*x + e)^3 + 3*(63*a^2*c^2*d + 180*a^2*c*d^2 + 73*a^2*d^3)*cos(f*x + e)^
2 + 5*(27*a^2*c*d^2 + 26*a^2*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/c
os(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^5 + f*cos(f*x + e)^4), -2/315*(3
15*(a^2*c^3*cos(f*x + e)^5 + a^2*c^3*cos(f*x + e)^4)*sqrt(a)*arctan(sqrt((a
*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - (35
*a^2*d^3 + (840*a^2*c^3 + 2709*a^2*c^2*d + 2070*a^2*c*d^2 + 584*a^2*d^3)*co
s(f*x + e)^4 + (105*a^2*c^3 + 882*a^2*c^2*d + 1035*a^2*c*d^2 + 292*a^2*d^3)
*cos(f*x + e)^3 + 3*(63*a^2*c^2*d + 180*a^2*c*d^2 + 73*a^2*d^3)*cos(f*x + e
)^2 + 5*(27*a^2*c*d^2 + 26*a^2*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)
/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^5 + f*cos(f*x + e)^4)]
```

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((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^3,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)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: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/
2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check s
ign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unab
le to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-
4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign:
(4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
 check sign: (4*pi/x/2)>(-4*pi/x/2)2*(2*((((-1/12759898410000*(-14886548145
000*sqrt(2)*a^7*c^3*sign(cos(f*x+exp(1)))-8425583712000*sqrt(2)*a^7*d^3*sig
n(cos(f*x+exp(1)))-29165482080000*sqrt(2)*a^7*c*d^2*sign(cos(f*x+exp(1)))-4
0831674912000*sqrt(2)*a^7*c^2*d*sign(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1))
)^2-1/125023500*(625117500*sqrt(2)*a^7*c^3*sign(cos(f*x+exp(1)))+371498400*
sqrt(2)*a^7*d^3*sign(cos(f*x+exp(1)))+1285956000*sqrt(2)*a^7*c*d^2*sign(cos
(f*x+exp(1)))+1800338400*sqrt(2)*a^7*c^2*d*sign(cos(f*x+exp(1)))))*tan(1/2*
(f*x+exp(1)))^2+1/27005076000*(216040608000*sqrt(2)*a^7*c^3*sign(cos(f*x+ex
p(1)))+140426395200*sqrt(2)*a^7*d^3*sign(cos(f*x+exp(1)))+486091368000*sqrt
(2)*a^7*c*d^2*sign(cos(f*x+exp(1)))+680527915200*sqrt(2)*a^7*c^2*d*sign(cos
(f*x+exp(1)))))*tan(1/2*(f*x+exp(1)))^2+1/1350253800*(-7651438200*sqrt(2)*a
^7*c^3*sign(cos(f*x+exp(1)))-5401015200*sqrt(2)*a^7*d^3*sign(cos(f*x+exp(1)
```

```
))-21604060800*sqrt(2)*a^7*c*d^2*sign(cos(f*x+exp(1)))-27005076000*sqrt(2)*
a^7*c^2*d*sign(cos(f*x+exp(1)))))*tan(1/2*(f*x+exp(1)))^2+1/3572100*(535815
0*sqrt(2)*a^7*c^3*sign(cos(f*x+exp(1)))+7144200*sqrt(2)*a^7*d^3*sign(cos(f*
x+exp(1)))+21432600*sqrt(2)*a^7*c*d^2*sign(cos(f*x+exp(1)))+21432600*sqrt(2
)*a^7*c^2*d*sign(cos(f*x+exp(1)))))/sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*
tan(1/2*(f*x+exp(1)))^2+a)^4*tan(1/2*(f*x+exp(1)))-1/2*a^3*sqrt(-a)*c^3*sig
n(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*ta
n(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+ex
p(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/abs(a)
)/f
```

maple [B] time = 1.91, size = 677, normalized size = 2.01

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(315\sqrt{2}\,\sin\left(fx+e\right)\left(\cos^4\left(fx+e\right)\right)\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{9}{2}}c^3+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^3,x)
```

```
[Out] -1/5040/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(315*2^(1/2)*sin(f*x+e)*cos(f
*x+e)^4*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x
+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)*c^3+1260*2^(1/2)*sin(f*x+
e)*cos(f*x+e)^3*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)
/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)*c^3+1890*2^(1/2)*
sin(f*x+e)*cos(f*x+e)^2*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*si
n(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)*c^3+1260*
2^(1/2)*sin(f*x+e)*cos(f*x+e)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1
/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)*c^3
+315*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/co
s(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(9/2)*c^3*sin(f*x+e)+26880
*cos(f*x+e)^5*c^3+86688*cos(f*x+e)^5*c^2*d+66240*cos(f*x+e)^5*c*d^2+18688*c
os(f*x+e)^5*d^3-23520*cos(f*x+e)^4*c^3-58464*cos(f*x+e)^4*c^2*d-33120*cos(f
*x+e)^4*c*d^2-9344*cos(f*x+e)^4*d^3-3360*cos(f*x+e)^3*c^3-22176*cos(f*x+e)^
3*c^2*d-15840*cos(f*x+e)^3*c*d^2-2336*cos(f*x+e)^3*d^3-6048*cos(f*x+e)^2*c^
2*d-12960*cos(f*x+e)^2*c*d^2-2848*cos(f*x+e)^2*d^3-4320*cos(f*x+e)*c*d^2-30
40*cos(f*x+e)*d^3-1120*d^3)/cos(f*x+e)^4/sin(f*x+e)*a^2
```

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((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))^3,x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))^3, x)
```

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

$$\int \left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}\left(c+d\sec\left(e+fx\right)\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)*(c+d*sec(f*x+e))**3,x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(5/2)*(c + d*sec(e + f*x))**3, x)
```

3.161 $\int (a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^2\,dx$

Optimal. Leaf size=258

$$\frac{2a^{7/2}c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{2\left(c^2+8cd+8d^2\right)\tan(e+fx)\left(a^3-a^3\sec(e+fx)\right)}{3f\sqrt{a\sec(e+fx)+a}}+\frac{2a^3(c+2d)(\ldots}{f\sqrt{a\,\mathrm{s}\ldots}}$$

```
[Out] 2*a^3*(c+2*d)*(3*c+2*d)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2/5*a*d*(2*c+5*
d)*(a-a*sec(f*x+e))^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2/7*d^2*(a-a*sec(
f*x+e))^3*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)-2/3*(c^2+8*c*d+8*d^2)*(a^3-a^
3*sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2*a^(7/2)*c^2*arctanh((a-
a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f
*x+e))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {3940, 180, 63, 206}

$$-\frac{2\left(c^2+8cd+8d^2\right)\tan(e+fx)\left(a^3-a^3\sec(e+fx)\right)}{3f\sqrt{a\sec(e+fx)+a}}+\frac{2a^{7/2}c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^3(c+2\ldots}{f\sqrt{a\ldots}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^3*(c + 2*d)*(3*c + 2*d)*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (
2*a^(7/2)*c^2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(f*Sq
rt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (2*a*d*(2*c + 5*d)*(a -
a*Sec[e + f*x])^2*Tan[e + f*x])/(5*f*Sqrt[a + a*Sec[e + f*x]]) - (2*d^2*(a
- a*Sec[e + f*x])^3*Tan[e + f*x])/(7*f*Sqrt[a + a*Sec[e + f*x]]) - (2*(c^2
+ 8*c*d + 8*d^2)*(a^3 - a^3*Sec[e + f*x])*Tan[e + f*x])/(3*f*Sqrt[a + a*Sec
[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
```

```
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^2\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\frac{(a+ax)^2(c+dx)^2}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{a^2(c+2d)(3c+2d)}{\sqrt{a-ax}}+\frac{a^2c^2}{x\sqrt{a-ax}}-a\left(c^2+8c\right.\right.\right.}{f\sqrt{a-a\sec(e}}$$

$$= \frac{2a^3(c+2d)(3c+2d)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2ad(2c+5d)(a-a\sec(e+}{5f\sqrt{a+a\sec(e}}$$

$$= \frac{2a^3(c+2d)(3c+2d)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2ad(2c+5d)(a-a\sec(e+}{5f\sqrt{a+a\sec(e}}$$

$$= \frac{2a^3(c+2d)(3c+2d)\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}}+\frac{2a^{7/2}c^2\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx}}{\sqrt{a}}\right.}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+}}$$

Mathematica [A] time = 2.67, size = 191, normalized size = 0.74

$$\frac{a^2\sec\left(\frac{1}{2}(e+fx)\right)\sec^3(e+fx)\sqrt{a(\sec(e+fx)+1)}\left(4\sin\left(\frac{1}{2}(e+fx)\right)\left(\left(420c^2+987cd+465d^2\right)\cos(e+fx)+\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (a^2*Sec[(e + f*x)/2]*Sec[e + f*x]^3*Sqrt[a*(1 + Sec[e + f*x])]*(420*Sqrt[2
]*c^2*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]]*Cos[e + f*x]^(7/2) + 4*(35*c^2 + 196
*c*d + 145*d^2 + (420*c^2 + 987*c*d + 465*d^2)*Cos[e + f*x] + (35*c^2 + 196
*c*d + 115*d^2)*Cos[2*(e + f*x)] + 140*c^2*Cos[3*(e + f*x)] + 301*c*d*Cos[3
*(e + f*x)] + 115*d^2*Cos[3*(e + f*x)])*Sin[(e + f*x)/2]))/(420*f)
```

fricas [A] time = 0.54, size = 500, normalized size = 1.94

$$\left[\frac{105\left(a^2c^2\cos\left(fx+e\right)^4+a^2c^2\cos\left(fx+e\right)^3\right)\sqrt{-a}\log\left(\frac{2a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-}{\cos\left(fx+e\right)+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/105*(105*(a^2*c^2*cos(f*x + e)^4 + a^2*c^2*cos(f*x + e)^3)*sqrt(-a)*log(
(2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(15*a
```

```
^2*d^2 + 2*(140*a^2*c^2 + 301*a^2*c*d + 115*a^2*d^2)*cos(f*x + e)^3 + (35*a
^2*c^2 + 196*a^2*c*d + 115*a^2*d^2)*cos(f*x + e)^2 + 6*(7*a^2*c*d + 10*a^2*
d^2)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f
*cos(f*x + e)^4 + f*cos(f*x + e)^3), -2/105*(105*(a^2*c^2*cos(f*x + e)^4 +
a^2*c^2*cos(f*x + e)^3)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x +
e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - (15*a^2*d^2 + 2*(140*a^2*c^2 + 3
01*a^2*c*d + 115*a^2*d^2)*cos(f*x + e)^3 + (35*a^2*c^2 + 196*a^2*c*d + 115*
a^2*d^2)*cos(f*x + e)^2 + 6*(7*a^2*c*d + 10*a^2*d^2)*cos(f*x + e))*sqrt((a*
cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^4 + f*cos(f*x
 + e)^3)]
```

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((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^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)Un
able to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
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to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/
2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)2*(2*(((-1/216090
000*(252105000*sqrt(2)*a^6*c^2*sign(cos(f*x+exp(1)))+164640000*sqrt(2)*a^6*
d^2*sign(cos(f*x+exp(1)))+460992000*sqrt(2)*a^6*c*d*sign(cos(f*x+exp(1))))*
tan(1/2*(f*x+exp(1)))^2-1/147000*(-563500*sqrt(2)*a^6*c^2*sign(cos(f*x+exp(
1)))-392000*sqrt(2)*a^6*d^2*sign(cos(f*x+exp(1)))-1097600*sqrt(2)*a^6*c*d*s
ign(cos(f*x+exp(1)))))*tan(1/2*(f*x+exp(1)))^2-1/3087000*(12862500*sqrt(2)*
a^6*c^2*sign(cos(f*x+exp(1)))+10290000*sqrt(2)*a^6*d^2*sign(cos(f*x+exp(1))
)+28812000*sqrt(2)*a^6*c*d*sign(cos(f*x+exp(1)))))*tan(1/2*(f*x+exp(1)))^2-
1/14700*(-22050*sqrt(2)*a^6*c^2*sign(cos(f*x+exp(1)))-29400*sqrt(2)*a^6*d^2
*sign(cos(f*x+exp(1)))-58800*sqrt(2)*a^6*c*d*sign(cos(f*x+exp(1)))))/sqrt(-
a*tan(1/2*(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^3*tan(1/2*(f*x+
exp(1)))-1/2*a^3*sqrt(-a)*c^2*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1
/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*
a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1)))
)^2+4*sqrt(2)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.80, size = 504, normalized size = 1.95

$$\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(105\sin\left(fx+e\right)\left(\cos^3\left(fx+e\right)\right)\sqrt{2}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{7}{2}}c^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^2,x)
```

```
[Out] 1/840/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(105*sin(f*x+e)*cos(f*x+e)^3*2^
(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e
)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*c^2+315*sin(f*x+e)*cos(f*x+
e)^2*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/co
s(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*c^2+315*sin(f*x+e)*c
os(f*x+e)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+
e)/cos(f*x+e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*c^2+105*arctanh
(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(7/2)*2^(1/2)*c^2*sin(f*x+e)-4480*cos(f*x+e)^4
*c^2-9632*cos(f*x+e)^4*c*d-3680*cos(f*x+e)^4*d^2+3920*cos(f*x+e)^3*c^2+6496
*cos(f*x+e)^3*c*d+1840*cos(f*x+e)^3*d^2+560*cos(f*x+e)^2*c^2+2464*cos(f*x+e
)^2*c*d+880*cos(f*x+e)^2*d^2+672*cos(f*x+e)*c*d+720*cos(f*x+e)*d^2+240*d^2)
/sin(f*x+e)/cos(f*x+e)^3*a^2
```

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((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int {\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))^2,x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))^2, x)
```

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

$$\int \left(a \left(\sec{\left(e + f x \right)} + 1\right)\right)^{\frac{5}{2}} \left(c + d \sec{\left(e + f x \right)}\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)*(c+d*sec(f*x+e))**2,x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(5/2)*(c + d*sec(e + f*x))**2, x)
```

3.162 $\int (a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))\,dx$

Optimal. Leaf size=142

$$\frac{2a^{5/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2a^3(35c+32d)\tan(e+fx)}{15f\sqrt{a\sec(e+fx)+a}}+\frac{2a^2(5c+8d)\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{15f}+\frac{2ad}{}$$

```
[Out] 2*a^(5/2)*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f+2/5*a*d*(a+
a*sec(f*x+e))^(3/2)*tan(f*x+e)/f+2/15*a^3*(35*c+32*d)*tan(f*x+e)/f/(a+a*sec
(f*x+e))^(1/2)+2/15*a^2*(5*c+8*d)*(a+a*sec(f*x+e))^(1/2)*tan(f*x+e)/f
```

Rubi [A] time = 0.23, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {3917, 3915, 3774, 203, 3792}

$$\frac{2a^3(35c+32d)\tan(e+fx)}{15f\sqrt{a\sec(e+fx)+a}}+\frac{2a^2(5c+8d)\tan(e+fx)\sqrt{a\sec(e+fx)+a}}{15f}+\frac{2a^{5/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{f}+\frac{2ad}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*a^(5/2)*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/f + (
2*a^3*(35*c + 32*d)*Tan[e + f*x])/(15*f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^2*
(5*c + 8*d)*Sqrt[a + a*Sec[e + f*x]]*Tan[e + f*x])/(15*f) + (2*a*d*(a + a*S
ec[e + f*x])^(3/2)*Tan[e + f*x])/(5*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 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3792

```
Int[csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*b*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e + f*x]]), x] /; Free
Q[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3915

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_)), x_Symbol] :> Dist[c, Int[Sqrt[a + b*Csc[e + f*x]], x], x] + Dis
t[d, Int[Sqrt[a + b*Csc[e + f*x]]*Csc[e + f*x], x], x] /; FreeQ[{a, b, c, d
, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rule 3917

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[(b*d*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m -
 1))/(f*m), x] + Dist[1/m, Int[(a + b*Csc[e + f*x])^(m - 1)*Simp[a*c*m + (b
*c*m + a*d*(2*m - 1))*Csc[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f},
```

```
x] && NeQ[b*c - a*d, 0] && GtQ[m, 1] && EqQ[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int (a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))\,dx = \frac{2ad(a+a\sec(e+fx))^{3/2}\tan(e+fx)}{5f}+\frac{2}{5}\int (a+a\sec(e+fx))^{3/}$$

$$= \frac{2a^2(5c+8d)\sqrt{a+a\sec(e+fx)}\tan(e+fx)}{15f}+\frac{2ad(a+a\sec(e+}{}$$

$$= \frac{2a^2(5c+8d)\sqrt{a+a\sec(e+fx)}\tan(e+fx)}{15f}+\frac{2ad(a+a\sec(e+}{}$$

$$= \frac{2a^3(35c+32d)\tan(e+fx)}{15f\sqrt{a+a\sec(e+fx)}}+\frac{2a^2(5c+8d)\sqrt{a+a\sec(e+fx)}\ \mathrm{ta}}{15f}$$

$$= \frac{2a^{5/2}c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f}+\frac{2a^3(35c+32d)\tan(e+fx)}{15f\sqrt{a+a\sec(e+fx)}}+\frac{2a^2}{}$$

Mathematica [A] time = 1.03, size = 128, normalized size = 0.90

$$\frac{a^2\sec\left(\frac{1}{2}(e+fx)\right)\sec^2(e+fx)\sqrt{a(\sec(e+fx)+1)}\left(2\sin\left(\frac{1}{2}(e+fx)\right)(2(5c+14d)\cos(e+fx)+(40c+43d)\cos\right.}{30f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] (a^2*Sec[(e + f*x)/2]*Sec[e + f*x]^2*Sqrt[a*(1 + Sec[e + f*x])]*(30*Sqrt[2]
*c*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]]*Cos[e + f*x]^(5/2) + 2*(40*c + 49*d + 2
*(5*c + 14*d)*Cos[e + f*x] + (40*c + 43*d)*Cos[2*(e + f*x)])*Sin[(e + f*x)/
2]))/(30*f)
```

fricas [A] time = 0.46, size = 390, normalized size = 2.75

$$\left[\frac{15\left(a^2c\cos\left(fx+e\right)^3+a^2c\cos\left(fx+e\right)^2\right)\sqrt{-a}\log\left(\frac{2a\cos\left(fx+e\right)^2-2\sqrt{-a}\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\sin\left(fx+e\right)+a\cos\left(fx+e\right)-a}{\cos\left(fx+e\right)+1}\right)}{15\left(f\cos\left(fx+e\right)^3+f\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/15*(15*(a^2*c*cos(f*x + e)^3 + a^2*c*cos(f*x + e)^2)*sqrt(-a)*log((2*a*c
os(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
+ e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*(3*a^2*d +
(40*a^2*c + 43*a^2*d)*cos(f*x + e)^2 + (5*a^2*c + 14*a^2*d)*cos(f*x + e))*s
qrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(f*cos(f*x + e)^3 + f*
cos(f*x + e)^2), -2/15*(15*(a^2*c*cos(f*x + e)^3 + a^2*c*cos(f*x + e)^2)*sq
rt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*
sin(f*x + e))) - (3*a^2*d + (40*a^2*c + 43*a^2*d)*cos(f*x + e)^2 + (5*a^2*c
```

```
 + 14*a^2*d)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x
+ e))/(f*cos(f*x + e)^3 + f*cos(f*x + e)^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((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)2*(2*((-1/405000*(-472500*sqrt(2)*a^5*c*sign(cos(f*x+exp
(1)))-432000*sqrt(2)*a^5*d*sign(cos(f*x+exp(1))))*tan(1/2*(f*x+exp(1)))^2-1
/450*(1200*sqrt(2)*a^5*c*sign(cos(f*x+exp(1)))+1200*sqrt(2)*a^5*d*sign(cos(
f*x+exp(1)))))*tan(1/2*(f*x+exp(1)))^2-1/9000*(-13500*sqrt(2)*a^5*c*sign(co
s(f*x+exp(1)))-18000*sqrt(2)*a^5*d*sign(cos(f*x+exp(1)))))/sqrt(-a*tan(1/2*
(f*x+exp(1)))^2+a)/(-a*tan(1/2*(f*x+exp(1)))^2+a)^2*tan(1/2*(f*x+exp(1)))-1
/2*a^3*sqrt(-a)*c*sign(cos(f*x+exp(1)))*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(
1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sq
rt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2
)*abs(a)-6*a))/abs(a))/f
```

maple [B] time = 1.48, size = 341, normalized size = 2.40

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(15\left(\cos^{2}\left(fx+e\right)\right)\sin\left(fx+e\right)\sqrt{2}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\left(-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}\right)^{\frac{5}{2}}c+\cdots\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),x)
```

```
[Out] -1/60/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(15*cos(f*x+e)^2*sin(f*x+e)*2^(
1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)
*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*c+30*cos(f*x+e)*sin(f*x+e)*2
^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+
e)*2^(1/2))*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(5/2)*c+15*2^(1/2)*arctanh(1/2*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(5/2)*c*sin(f*x+e)+320*cos(f*x+e)^3*c+344*cos(f*x+e)
^3*d-280*cos(f*x+e)^2*c-232*cos(f*x+e)^2*d-40*c*cos(f*x+e)-88*d*cos(f*x+e)-
24*d)/cos(f*x+e)^2/sin(f*x+e)*a^2
```

maxima [B] time = 0.80, size = 1396, normalized size = 9.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/6*(30*(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^
(3/4)*a^(5/2)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - 2*
(cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*((
12*a^2*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))*sin(2*f*x + 2*e
) - 3*a^2*sin(2*f*x + 2*e) - 4*(3*a^2*cos(2*f*x + 2*e) + 4*a^2)*sin(3/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))))*cos(3/2*arctan2(sin(2*f*x + 2*e)
, cos(2*f*x + 2*e) + 1)) + (12*a^2*sin(2*f*x + 2*e)*sin(3/2*arctan2(sin(2*f
*x + 2*e), cos(2*f*x + 2*e))) + 3*a^2*cos(2*f*x + 2*e) - a^2 + 4*(3*a^2*cos
(2*f*x + 2*e) + 4*a^2)*cos(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))
)*sin(3/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)))*sqrt(a) + 3*((a
^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e)^2 + 2*a^2*cos(2*f*x + 2*e) + a
^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) +
 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)))*sin(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arctan2(sin(2*f*x +
 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x +
 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1
)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*cos(1/2*a
rctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2
*e)))) + 1) - (a^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e)^2 + 2*a^2*cos(
2*f*x + 2*e) + a^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*co
s(2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*
e)))*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - cos(1/2*arc
tan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2
*e), cos(2*f*x + 2*e)))), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(
2*f*x + 2*e) + 1)^(1/4)*(cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
 + 1))*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e))) + sin(1/2*arcta
n2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1))*sin(1/2*arctan2(sin(2*f*x + 2*e
), cos(2*f*x + 2*e)))) - 1) - (a^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e
)^2 + 2*a^2*cos(2*f*x + 2*e) + a^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x
 + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e),
 cos(2*f*x + 2*e) + 1)), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2
*f*x + 2*e) + 1)^(1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) +
 1)) + 1) + (a^2*cos(2*f*x + 2*e)^2 + a^2*sin(2*f*x + 2*e)^2 + 2*a^2*cos(2*
f*x + 2*e) + a^2)*arctan2((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(
2*f*x + 2*e) + 1)^(1/4)*sin(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e)
+ 1)), (cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)^(
1/4)*cos(1/2*arctan2(sin(2*f*x + 2*e), cos(2*f*x + 2*e) + 1)) - 1))*sqrt(a)
)*c/((cos(2*f*x + 2*e)^2 + sin(2*f*x + 2*e)^2 + 2*cos(2*f*x + 2*e) + 1)*f)
```

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

$$\int \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x)),x)
```

```
[Out] int((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x)), x)
```

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

$$\int \left(a \left(\sec{\left(e + f x \right)} + 1\right)\right)^{\frac{5}{2}} \left(c + d \sec{\left(e + f x \right)}\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)*(c+d*sec(f*x+e)),x)
```

```
[Out] Integral((a*(sec(e + f*x) + 1))**(5/2)*(c + d*sec(e + f*x)), x)
```

3.163 $\int \frac{(a+a\sec(e+fx))^{5/2}}{c+d\sec(e+fx)}\,dx$

Optimal. Leaf size=203

$$-\frac{2a^{7/2}(c-d)^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{cd^{3/2}f\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^{7/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{cf\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^3\tan(e}{df\sqrt{a\sec(e+}$$

```
[Out] 2*a^3*tan(f*x+e)/d/f/(a+a*sec(f*x+e))^(1/2)+2*a^(7/2)*arctanh((a-a*sec(f*x+
e))^(1/2)/a^(1/2))*tan(f*x+e)/c/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(
1/2)-2*a^(7/2)*(c-d)^2*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)
^(1/2))*tan(f*x+e)/c/d^(3/2)/f/(c+d)^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(
f*x+e))^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3940, 180, 63, 206, 208}

$$-\frac{2a^{7/2}(c-d)^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{cd^{3/2}f\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^{7/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{cf\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2a^3\tan(e}{df\sqrt{a\sec(e+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*a^3*Tan[e + f*x])/(d*f*Sqrt[a + a*Sec[e + f*x]]) + (2*a^(7/2)*ArcTanh[Sq
rt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c*f*Sqrt[a - a*Sec[e + f*x]]
*Sqrt[a + a*Sec[e + f*x]]) - (2*a^(7/2)*(c - d)^2*ArcTanh[(Sqrt[d]*Sqrt[a -
 a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(c*d^(3/2)*Sqrt[c +
d]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{c+d\sec(e+fx)}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(a+ax)^2}{x\sqrt{a-ax}\,(c+dx)}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{a^2}{d\sqrt{a-ax}}+\frac{a^2}{cx\sqrt{a-ax}}-\frac{a^2(c-d)^2}{cd\sqrt{a-ax}\,(c+dx)}\right)dx,x,\sec(e+f\ldots}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2a^3\tan(e+fx)}{df\sqrt{a+a\sec(e+fx)}} - \frac{\left(a^4\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{cf\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \ldots$$

$$= \frac{2a^3\tan(e+fx)}{df\sqrt{a+a\sec(e+fx)}} + \frac{\left(2a^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{1-\frac{x^2}{a}}\,dx,x,\sqrt{a-a\sec(e+\ldots}{cf\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2a^3\tan(e+fx)}{df\sqrt{a+a\sec(e+fx)}} + \frac{2a^{7/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{cf\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{2a^{7/2}(c-\ldots}{cd^{3/2}\sqrt{c+\ldots}}$$

Mathematica [C] time = 6.55, size = 343, normalized size = 1.69

$$\frac{\cos^{\frac{3}{2}}(e+fx)\sec^5\left(\frac{1}{2}(e+fx)\right)(a(\sec(e+fx)+1))^{5/2}(c\cos(e+fx)+d)\left(-\frac{16d(c-d)^2\sin^3\left(\frac{1}{2}(e+fx)\right)(c\cos(e+fx)+d)\,{}_2F_1\left(2\ldots\right.}{(c+d)^3\cos^{\frac{5}{2}}(e+f\ldots}\right.}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x]),x]
```

```
[Out] (Cos[e + f*x]^(3/2)*(d + c*Cos[e + f*x])*Sec[(e + f*x)/2]^5*(a*(1 + Sec[e +
 f*x]))^(5/2)*((10*(c - d)^2*(c + 3*d + 2*c*Cos[e + f*x])*Csc[(e + f*x)/2]*
(-ArcTanh[Sqrt[-((d*(-1 + Sec[e + f*x]))/(c + d))]] + Sqrt[-((d*(-1 + Sec[e
 + f*x]))/(c + d))]))/(d*(c + d)*Sqrt[Cos[e + f*x]]*Sqrt[-((d*(-1 + Sec[e +
 f*x]))/(c + d))]) + (20*(3*c - d)*Sin[(e + f*x)/2])/Sqrt[Cos[e + f*x]] - (
16*(c - d)^2*d*(d + c*Cos[e + f*x])*Hypergeometric2F1[2, 5/2, 7/2, (-2*d*Se
c[e + f*x]*Sin[(e + f*x)/2]^2)/(c + d)]*Sin[(e + f*x)/2]^3)/((c + d)^3*Cos[
e + f*x]^(5/2)) + 10*c*(Sqrt[2]*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]] - (2*Sin[(
e + f*x)/2])/Sqrt[Cos[e + f*x]])))/(40*c^2*f*(c + d*Sec[e + f*x]))
```

fricas [A] time = 5.11, size = 1140, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [(2*a^2*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) + (a^2*c^2 -
 2*a^2*c*d + a^2*d^2 + (a^2*c^2 - 2*a^2*c*d + a^2*d^2)*cos(f*x + e))*sqrt(-
a/(c*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2))*sqrt((a*cos(f*x + e)
 + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^
2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e
) + d)) + (a^2*d*cos(f*x + e) + a^2*d)*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2
*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)
 + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/(c*d*f*cos(f*x + e) + c*d*f), (
2*a^2*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 2*(a^2*d*cos
(f*x + e) + a^2*d)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*c
os(f*x + e)/(sqrt(a)*sin(f*x + e))) + (a^2*c^2 - 2*a^2*c*d + a^2*d^2 + (a^2
*c^2 - 2*a^2*c*d + a^2*d^2)*cos(f*x + e))*sqrt(-a/(c*d + d^2))*log((2*(c*d
+ d^2)*sqrt(-a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
 + e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f
*x + e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) + d)))/(c*d*f*cos(f*x + e
) + c*d*f), (2*a^2*c*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) +
 2*(a^2*c^2 - 2*a^2*c*d + a^2*d^2 + (a^2*c^2 - 2*a^2*c*d + a^2*d^2)*cos(f*x
 + e))*sqrt(a/(c*d + d^2))*arctan((c + d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(a*sin(f*x + e))) + (a^2*d*cos(f*x
+ e) + a^2*d)*sqrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(c
os(f*x + e) + 1)))/(c*d*f*cos(f*x + e) + c*d*f), 2*(a^2*c*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*sin(f*x + e) + (a^2*c^2 - 2*a^2*c*d + a^2*d^2 + (a^2
*c^2 - 2*a^2*c*d + a^2*d^2)*cos(f*x + e))*sqrt(a/(c*d + d^2))*arctan((c + d
)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/
(a*sin(f*x + e))) - (a^2*d*cos(f*x + e) + a^2*d)*sqrt(a)*arctan(sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))))/(c*d*f*c
os(f*x + e) + c*d*f)]
```

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((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),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: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign
: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable
to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*p
i/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*
pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to ch
eck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2
)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/
2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check s
ign: (4*pi/x/2)>(-4*pi/x/2)2*(sqrt(2)*a^3*sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a
)*sign(cos(f*x+exp(1)))*tan(1/2*(f*x+exp(1)))/d/(-a*tan(1/2*(f*x+exp(1)))^2
+a)+2*(1/512*(-256*sqrt(2)*a^3*sqrt(-a)*c^2*sign(cos(f*x+exp(1)))-256*sqrt(
2)*a^3*sqrt(-a)*d^2*sign(cos(f*x+exp(1)))+512*sqrt(2)*a^3*sqrt(-a)*c*d*sign
(cos(f*x+exp(1))))*atan(1/2*(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)
*tan(1/2*(f*x+exp(1))))^2-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*ta
n(1/2*(f*x+exp(1))))^2+a*c+3*a*d)/sqrt(2)/sqrt(-d^2-c*d)/a)/sqrt(2)/sqrt(-d
```

```
^2-c*d)/a/c/d+1/4*a^2*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(abs((sqrt(-a*tan(1/
2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a*(2*sqrt(2)-3)))/c-
1/4*a^2*sqrt(-a)*sign(cos(f*x+exp(1)))*ln(abs((sqrt(-a*tan(1/2*(f*x+exp(1))
)^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a*(-2*sqrt(2)-3)))/c))/f
```

maple [B] time = 1.50, size = 1487, normalized size = 7.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] -1/2/f*(2*(d/(c-d))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
sin(f*x+e)/cos(f*x+e)*2^(1/2))*((c+d)*(c-d))^(1/2)*2^(1/2)*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-ln(2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+
e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)*cos(f*x+e)-c*sin(
f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)-c*
cos(f*x+e)+d*cos(f*x+e)+c-d))*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
c^2*sin(f*x+e)+2*ln(2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)*cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+
e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(
f*x+e)+c-d))*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*c*d*sin(f*x+e)-ln
(2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+
e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e
)+((c+d)*(c-d))^(1/2)*cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1
/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))*2^(1/2
)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d^2*sin(f*x+e)+ln(-2*((d/(c-d))^(1/2
)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d
))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x+e)+d*s
in(f*x+e)-((c+d)*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d)*(c-d)
)^(1/2)*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d))*2^(1/2)*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*c^2*sin(f*x+e)-2*ln(-2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)
/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)
*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+
e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d))*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*c*d*sin(f*x+e)+ln(-2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2)*cos(
f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)+c*cos(f*x+e)-d*
cos(f*x+e)-c+d))*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d^2*sin(f*x+e
)+4*(d/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*c*cos(f*x+e)-4*(d/(c-d))^(1/2)*((c+
d)*(c-d))^(1/2)*c)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)*a^2/c/((c
+d)*(c-d))^(1/2)/d/(d/(c-d))^(1/2)
```

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

$$\int \frac{\left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{d\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((a*sec(f*x + e) + a)^(5/2)/(d*sec(f*x + e) + c), x)
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{c+\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x)),x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x)), x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}}{c+d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e)),x)
[Out] Integral((a*(sec(e + f*x) + 1))**(5/2)/(c + d*sec(e + f*x)), x)
```

3.164 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=329

$$\frac{2a^{7/2}(c-d)\sqrt{c+d}\,\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^2d^{3/2}f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2a^{7/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\frac{a^{7/2}(}{cd^{3/2}f(}$$

```
[Out] -a^3*(c-d)^2*tan(f*x+e)/c/d/(c+d)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)
+2*a^(7/2)*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c^2/f/(a-a*se
c(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-a^(7/2)*(c-d)^2*arctanh(d^(1/2)*(a-a
*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c/d^(3/2)/(c+d)^(3/2)/f/
(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+2*a^(7/2)*(c-d)*arctanh(d^(1/
2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*(c+d)^(1/2)*tan(f*x+e)/c^2/d
^(3/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 329, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 180, 63, 206, 51, 208}

$$\frac{2a^{7/2}(c-d)\sqrt{c+d}\,\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^2d^{3/2}f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2a^{7/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\frac{a^{7/2}(}{cd^{3/2}f(}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^(7/2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^2*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (a^(7/2)*(c - d)^2*ArcT
anh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])
/(c*d^(3/2)*(c + d)^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x
]]) + (2*a^(7/2)*(c - d)*Sqrt[c + d]*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*
x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(c^2*d^(3/2)*f*Sqrt[a - a*Sec[e +
 f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (a^3*(c - d)^2*Tan[e + f*x])/(c*d*(c + d
)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
```

```
g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^2}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(a+ax)^2}{x\sqrt{a-ax}\,(c+dx)^2}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{a^2}{c^2x\sqrt{a-ax}}-\frac{a^2(c-d)^2}{cd\sqrt{a-ax}\,(c+dx)^2}+\frac{a^2\left(c^2-d^2\right)}{c^2d\sqrt{a-ax}\,(c+dx)}\right)dx,x,\sec(\ldots}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^4\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}+\frac{\left(a^4(c-d)^2\tan(e+fx)\right)\text{S}\ldots}{cdf\sqrt{a-a\sec\ldots}}$$

$$= -\frac{a^3(c-d)^2\tan(e+fx)}{cd(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))}+\frac{\left(2a^3\tan(e+fx)\right)\text{Subst}\left(\int \ldots\right.}{c^2f\sqrt{a-a\sec(e+f\ldots}}$$

$$= \frac{2a^{7/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}+\frac{2a^{7/2}(c-d)\sqrt{c+d}\,\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\,\text{se}\ldots}}{\sqrt{a}\,\sqrt{c\ldots}}\right.}{c^2d^{3/2}f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+\ldots}}$$

$$= \frac{2a^{7/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}-\frac{a^{7/2}(c-d)^2\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx\ldots}}{\sqrt{a}\,\sqrt{c+d}}\right.}{cd^{3/2}(c+d)^{3/2}f\sqrt{a-a\sec(e+fx)}\,\sqrt{\ldots}}$$

Mathematica [A] time = 3.64, size = 280, normalized size = 0.85

$$\frac{\sqrt{\cos(e+fx)}\,\sec^5\left(\frac{1}{2}(e+fx)\right)(a(\sec(e+fx)+1))^{5/2}(c\cos(e+fx)+d)^2\left(\frac{4\sqrt{2}\,(c-d)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{d}\,\sin\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}\,\sqrt{\cos(e+fx)}}\right)}{\sqrt{d}\,\sqrt{c+d}}-\frac{(c-d)^2\,\text{si}\ldots}{\ldots}\right.}{8c^2f(c+d\sec(e+fx)\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (Sqrt[Cos[e + f*x]]*(d + c*Cos[e + f*x])^2*Sec[(e + f*x)/2]^5*(a*(1 + Sec[e
 + f*x]))^(5/2)*(2*Sqrt[2]*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]] + (4*Sqrt[2]*(c
 - d)*ArcTan[(Sqrt[2]*Sqrt[d]*Sin[(e + f*x)/2])/(Sqrt[c + d]*Sqrt[Cos[e + f
*x]])])/(Sqrt[d]*Sqrt[c + d]) - ((c - d)^2*(2*c*Cos[e + f*x] - (2*(c + 2*d)
*ArcTanh[Sqrt[-((d*(-1 + Sec[e + f*x]))/(c + d))]]*(d + c*Cos[e + f*x]))/((
c + d)*Sqrt[-((d*(-1 + Sec[e + f*x]))/(c + d))]))*Sin[(e + f*x)/2])/(d*(c +
 d)*Sqrt[Cos[e + f*x]]*(d + c*Cos[e + f*x]))))/(8*c^2*f*(c + d*Sec[e + f*x]
)^2)
```

<u>fricas</u> [A] time = 23.66, size = 2031, normalized size = 6.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(a^2*c^3 - 2*a^2*c^2*d + a^2*c*d^2)*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*cos(f*x + e)*sin(f*x + e) + (a^2*c^3*d + 4*a^2*c^2*d^2 - 3*a^2*c*
d^3 - 2*a^2*d^4 + (a^2*c^4 + 4*a^2*c^3*d - 3*a^2*c^2*d^2 - 2*a^2*c*d^3)*cos
(f*x + e)^2 + (a^2*c^4 + 5*a^2*c^3*d + a^2*c^2*d^2 - 5*a^2*c*d^3 - 2*a^2*d^
4)*cos(f*x + e))*sqrt(-a/(c*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2
))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c
 + 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^
2 + (c + d)*cos(f*x + e) + d)) - 2*(a^2*c*d^2 + a^2*d^3 + (a^2*c^2*d + a^2*
c*d^2)*cos(f*x + e)^2 + (a^2*c^2*d + 2*a^2*c*d^2 + a^2*d^3)*cos(f*x + e))*s
qrt(-a)*log((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1
)))/((c^4*d + c^3*d^2)*f*cos(f*x + e)^2 + (c^4*d + 2*c^3*d^2 + c^2*d^3)*f*c
os(f*x + e) + (c^3*d^2 + c^2*d^3)*f), -1/2*(2*(a^2*c^3 - 2*a^2*c^2*d + a^2*
c*d^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) +
4*(a^2*c*d^2 + a^2*d^3 + (a^2*c^2*d + a^2*c*d^2)*cos(f*x + e)^2 + (a^2*c^2*
d + 2*a^2*c*d^2 + a^2*d^3)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e
) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (a^2*c^3*d + 4*
a^2*c^2*d^2 - 3*a^2*c*d^3 - 2*a^2*d^4 + (a^2*c^4 + 4*a^2*c^3*d - 3*a^2*c^2*
d^2 - 2*a^2*c*d^3)*cos(f*x + e)^2 + (a^2*c^4 + 5*a^2*c^3*d + a^2*c^2*d^2 -
5*a^2*c*d^3 - 2*a^2*d^4)*cos(f*x + e))*sqrt(-a/(c*d + d^2))*log((2*(c*d + d
^2)*sqrt(-a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x
+ e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) + d)))/((c^4*d + c^3*d^2)*f*
cos(f*x + e)^2 + (c^4*d + 2*c^3*d^2 + c^2*d^3)*f*cos(f*x + e) + (c^3*d^2 +
c^2*d^3)*f), -((a^2*c^3 - 2*a^2*c^2*d + a^2*c*d^2)*sqrt((a*cos(f*x + e) + a
)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a^2*c^3*d + 4*a^2*c^2*d^2 - 3*
a^2*c*d^3 - 2*a^2*d^4 + (a^2*c^4 + 4*a^2*c^3*d - 3*a^2*c^2*d^2 - 2*a^2*c*d^
3)*cos(f*x + e)^2 + (a^2*c^4 + 5*a^2*c^3*d + a^2*c^2*d^2 - 5*a^2*c*d^3 - 2*
a^2*d^4)*cos(f*x + e))*sqrt(a/(c*d + d^2))*arctan((c + d)*sqrt(a/(c*d + d^2
))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(a*sin(f*x + e))) -
 (a^2*c*d^2 + a^2*d^3 + (a^2*c^2*d + a^2*c*d^2)*cos(f*x + e)^2 + (a^2*c^2*d
 + 2*a^2*c*d^2 + a^2*d^3)*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x + e)^2 -
2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e
) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/((c^4*d + c^3*d^2)*f*cos(f*x +
 e)^2 + (c^4*d + 2*c^3*d^2 + c^2*d^3)*f*cos(f*x + e) + (c^3*d^2 + c^2*d^3)*
f), -((a^2*c^3 - 2*a^2*c^2*d + a^2*c*d^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x
 + e))*cos(f*x + e)*sin(f*x + e) + (a^2*c^3*d + 4*a^2*c^2*d^2 - 3*a^2*c*d^3
 - 2*a^2*d^4 + (a^2*c^4 + 4*a^2*c^3*d - 3*a^2*c^2*d^2 - 2*a^2*c*d^3)*cos(f*
x + e)^2 + (a^2*c^4 + 5*a^2*c^3*d + a^2*c^2*d^2 - 5*a^2*c*d^3 - 2*a^2*d^4)*
cos(f*x + e))*sqrt(a/(c*d + d^2))*arctan((c + d)*sqrt(a/(c*d + d^2))*sqrt((
```

```
a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(a*sin(f*x + e))) + 2*(a^2*c
*d^2 + a^2*d^3 + (a^2*c^2*d + a^2*c*d^2)*cos(f*x + e)^2 + (a^2*c^2*d + 2*a^
2*c*d^2 + a^2*d^3)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/c
os(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))))/((c^4*d + c^3*d^2)*f*cos
(f*x + e)^2 + (c^4*d + 2*c^3*d^2 + c^2*d^3)*f*cos(f*x + e) + (c^3*d^2 + c^2
*d^3)*f)]
```

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((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Un
able to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>
(-4*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)-512*sqrt(2)*a^3*sqr
t(-a)*(-a)^2*((-c^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f
*x+exp(1))))^2+3*d^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(
f*x+exp(1))))^2-2*c*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*
(f*x+exp(1))))^2-a*c^2-a*d^2+2*a*c*d)/(256*a^2*c*d^2+256*a^2*c^2*d)/(c*(sqr
t(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4-d*(sqrt(-
a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4+2*a*c*(sqrt(
-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+6*a*d*(sqrt
(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a^2*c-a^2*
d)+1/512*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x
+exp(1))))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a
)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/sqrt(2)/a^2/c^2/
abs(a)+1/4*(c^3-2*d^3-3*c*d^2+4*c^2*d)*atan(1/2*(c*(sqrt(-a*tan(1/2*(f*x+ex
p(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2-d*(sqrt(-a*tan(1/2*(f*x+exp(1
)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a*c+3*a*d)/sqrt(2)/sqrt(-d^2-c*d
)/a)/sqrt(2)/sqrt(-d^2-c*d)/a/(-128*a^2*c^2*d^2-128*a^2*c^3*d))*sign(cos(f*
x+exp(1)))/f
```

maple [B] time = 2.12, size = 46082, normalized size = 140.07

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^2,x)
```

```
[Out] result too large to display
```

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((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x))^2,x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x))^2, x)
```

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

$$\int \frac{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}}{\left(c+d\sec\left(e+fx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e))**2,x)
[Out] Integral((a*(sec(e + f*x) + 1))**(5/2)/(c + d*sec(e + f*x))**2, x)
```

3.165 $\int \frac{(a+a\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=536

$$-\frac{2a^{7/2}\sqrt{d}\,\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^3f\sqrt{c+d}\,\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2a^{7/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{a^{7/2}(c-d)\,\tan}{c^2d^{3/2}f\sqrt{c+d}\,\sqrt{}}$$

```
[Out] -1/2*a^3*(c-d)^2*tan(f*x+e)/c/d/(c+d)/f/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))
^(1/2)+a^3*(c-d)*tan(f*x+e)/c^2/d/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)
-3/4*a^3*(c-d)^2*tan(f*x+e)/c/d/(c+d)^2/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))
^(1/2)+2*a^(7/2)*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c^3/f/(
a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-3/4*a^(7/2)*(c-d)^2*arctanh(d^
(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c/d^(3/2)/(c+d
)^(5/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+a^(7/2)*(c-d)*arcta
nh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c^2/d^(3/
2)/f/(c+d)^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-2*a^(7/2)*ar
ctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*d^(1/2)*tan(f*x+e
)/c^3/f/(c+d)^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 536, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 180, 63, 206, 51, 208}

$$\frac{a^{7/2}(c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^2d^{3/2}f\sqrt{c+d}\,\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{a^3(c-d)\tan(e+fx)}{c^2df\sqrt{a\sec(e+fx)+a}\,(c+d\sec(e+fx))}-\frac{2a^{7/2}\sqrt{d}\,\tan}{c^3f\sqrt{c+d}\,\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (2*a^(7/2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^3*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (3*a^(7/2)*(c - d)^2*Ar
cTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x
])/(4*c*d^(3/2)*(c + d)^(5/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e +
 f*x]]) + (a^(7/2)*(c - d)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt
[a]*Sqrt[c + d])]*Tan[e + f*x])/(c^2*d^(3/2)*Sqrt[c + d]*f*Sqrt[a - a*Sec[e
 + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (2*a^(7/2)*Sqrt[d]*ArcTanh[(Sqrt[d]*Sq
rt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(c^3*Sqrt[c +
d]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (a^3*(c - d)^2*Ta
n[e + f*x])/(2*c*d*(c + d)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^
2) + (a^3*(c - d)*Tan[e + f*x])/(c^2*d*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Se
c[e + f*x])) - (3*a^3*(c - d)^2*Tan[e + f*x])/(4*c*d*(c + d)^2*f*Sqrt[a + a
*Sec[e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
```

```
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(a+a\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^3}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(a+ax)^2}{x\sqrt{a-ax}\,(c+dx)^3}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{a^2}{c^3x\sqrt{a-ax}} - \frac{a^2(c-d)^2}{cd\sqrt{a-ax}\,(c+dx)^3} + \frac{a^2\left(c^2-d^2\right)}{c^2d\sqrt{a-ax}\,(c+dx)^2} - \frac{a^2d}{c^3\sqrt{a-ax}\,(c\right.\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^4\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{\left(a^4(c-d)^2\tan(e+fx)\right)\text{S}}{cdf\sqrt{a-a\sec}}$$

$$= -\frac{a^3(c-d)^2\tan(e+fx)}{2cd(c+d)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} + \frac{a^3(c-d)\tan(e+}{c^2df\sqrt{a+a\sec(e+fx)}\,(c+}$$

$$= \frac{2a^{7/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{2a^{7/2}\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)\text{t}}{c^3\sqrt{c+d}\,f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a}}$$

$$= \frac{2a^{7/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{a^{7/2}(c-d)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right.}{c^2d^{3/2}\sqrt{c+d}\,f\sqrt{a-a\sec(e+fx)}\,\sqrt{a}}$$

$$= \frac{2a^{7/2}\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{3a^{7/2}(c-d)^2\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+}}{\sqrt{a}\,\sqrt{c+d}}\right.}{4cd^{3/2}(c+d)^{5/2}f\sqrt{a-a\sec(e+fx)}\,\sqrt{}}$$

Mathematica [C] time = 26.11, size = 3344, normalized size = 6.24

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + a*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] ((d + c*Cos[e + f*x])^3*Sec[(e + f*x)/2]^5*Sec[e + f*x]*(a*(1 + Sec[e + f*x
]))^(5/2)*(-1/16*((c^3 - 12*c^2*d + 5*c*d^2 + 6*d^3)*Sin[(e + f*x)/2])/(c^3
*d*(c + d)^2) + (-(c^2*d*Sin[(e + f*x)/2]) + 2*c*d^2*Sin[(e + f*x)/2] - d^3
*Sin[(e + f*x)/2])/(8*c^3*(c + d)*(d + c*Cos[e + f*x])^2) + (3*c^3*Sin[(e +
 f*x)/2] - 14*c^2*d*Sin[(e + f*x)/2] + 3*c*d^2*Sin[(e + f*x)/2] + 8*d^3*Sin
[(e + f*x)/2])/(16*c^3*(c + d)^2*(d + c*Cos[e + f*x]))))/(f*(c + d*Sec[e +
f*x])^3) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*(d + c*Cos[e + f*x])^3*(
c*(c^3 + 18*c^2*d + 9*c*d^2 + 4*d^3)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt
[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*d*(c + d)^3*EllipticPi[-3 + 2*Sqrt[
2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^4 +
 10*c^3*d - 15*c^2*d^2 - 20*c*d^3 - 8*d^4)*(EllipticPi[-(((-3 + 2*Sqrt[2])*
(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sq
rt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d)
)/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 -
2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sec[(e + f*x)/2]^5*((7*Cos[(e + f*x)/2]*Sqr
t[Sec[e + f*x]])/(16*(c + d)^2*(d + c*Cos[e + f*x])) + (c*Cos[(e + f*x)/2]*
Sqrt[Sec[e + f*x]])/(32*d*(c + d)^2*(d + c*Cos[e + f*x])) + (d*Cos[(e + f*x
)/2]*Sqrt[Sec[e + f*x]])/(32*c*(c + d)^2*(d + c*Cos[e + f*x])) + (Cos[(3*(e
 + f*x))/2]*Sqrt[Sec[e + f*x]])/(8*(c + d)^2*(d + c*Cos[e + f*x])) + (d*Cos
[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]])/(4*c*(c + d)^2*(d + c*Cos[e + f*x]))
+ (d^2*Cos[(3*(e + f*x))/2]*Sqrt[Sec[e + f*x]])/(8*c^2*(c + d)^2*(d + c*Cos
[e + f*x])))*Sec[e + f*x]*(a*(1 + Sec[e + f*x]))^(5/2)*Sqrt[1 + (-3 + 2*Sqr
```

```
t[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(8*
c^3*d*(c + d)^3*f*(c + d*Sec[e + f*x])^3*((Sqrt[3 - 2*Sqrt[2]]*(3 + 2*Sqrt[
2])*(c*(c^3 + 18*c^2*d + 9*c*d^2 + 4*d^3)*EllipticF[ArcSin[Tan[(e + f*x)/4]
/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*d*(c + d)^3*EllipticPi[-3 + 2*
Sqrt[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (
c^4 + 10*c^3*d - 15*c^2*d^2 - 20*c*d^3 - 8*d^4)*(EllipticPi[-(((-3 + 2*Sqrt
[2])*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/
4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c
 + d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt
[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Tan[(e + f*x)/4]*Sq
rt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(32*c^3*d*(c + d)^3*Sqrt[1 - (
3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]) - (Sqrt[3 - 2*Sqrt[2]]*(-3 + 2*Sqrt[2])
*(c*(c^3 + 18*c^2*d + 9*c*d^2 + 4*d^3)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sq
rt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*d*(c + d)^3*EllipticPi[-3 + 2*Sqr
t[2], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^4
 + 10*c^3*d - 15*c^2*d^2 - 20*c*d^3 - 8*d^4)*(EllipticPi[-(((-3 + 2*Sqrt[2]
)*(c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/
Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c +
d))/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3
- 2*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Tan[(e + f*x)/4]*Sqrt[
1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2])/(32*c^3*d*(c + d)^3*Sqrt[1 + (-3 +
 2*Sqrt[2])*Tan[(e + f*x)/4]^2]) + (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]*(c
*(c^3 + 18*c^2*d + 9*c*d^2 + 4*d^3)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[
3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*d*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2
], ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^4 +
10*c^3*d - 15*c^2*d^2 - 20*c*d^3 - 8*d^4)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(
c + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqr
t[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))
/(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2
*Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sqrt[Sec[e + f*x]]*Sin[(e + f*x)/4]*Sqrt[1 +
 (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x
)/4]^2])/(16*c^3*d*(c + d)^3) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*(c*
(c^3 + 18*c^2*d + 9*c*d^2 + 4*d^3)*EllipticF[ArcSin[Tan[(e + f*x)/4]/Sqrt[3
 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - 16*d*(c + d)^3*EllipticPi[-3 + 2*Sqrt[2]
, ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] - (c^4 + 1
0*c^3*d - 15*c^2*d^2 - 20*c*d^3 - 8*d^4)*(EllipticPi[-(((-3 + 2*Sqrt[2])*(c
 + d))/(3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] - d)), ArcSin[Tan[(e + f*x)/4]/Sqrt
[3 - 2*Sqrt[2]]], 17 - 12*Sqrt[2]] + EllipticPi[((-3 + 2*Sqrt[2])*(c + d))/
(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d), ArcSin[Tan[(e + f*x)/4]/Sqrt[3 - 2*
Sqrt[2]]], 17 - 12*Sqrt[2]]))*Sec[e + f*x]^(3/2)*Sin[e + f*x]*Sqrt[1 + (-3
+ 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^
2])/(16*c^3*d*(c + d)^3) - (Sqrt[3 - 2*Sqrt[2]]*Cos[(e + f*x)/4]^2*Sqrt[Sec
[e + f*x]]*Sqrt[1 + (-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2]*Sqrt[1 - (3 + 2*Sq
rt[2])*Tan[(e + f*x)/4]^2]*((c*(c^3 + 18*c^2*d + 9*c*d^2 + 4*d^3)*Sec[(e +
f*x)/4]^2)/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2
])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]) - (4*
d*(c + d)^3*Sec[(e + f*x)/4]^2)/(Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)
/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 -
 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2]))) -
 (c^4 + 10*c^3*d - 15*c^2*d^2 - 20*c*d^3 - 8*d^4)*(Sec[(e + f*x)/4]^2/(4*Sq
rt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((1
7 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(3 - 2*Sqrt[2])]*(1 + ((-3 + 2*Sqrt[2])
*(c + d)*Tan[(e + f*x)/4]^2)/((3 - 2*Sqrt[2])*(3*c + 2*Sqrt[2]*Sqrt[c*(c -
d)] - d)))) + Sec[(e + f*x)/4]^2/(4*Sqrt[3 - 2*Sqrt[2]]*Sqrt[1 - Tan[(e + f
*x)/4]^2/(3 - 2*Sqrt[2])]*Sqrt[1 - ((17 - 12*Sqrt[2])*Tan[(e + f*x)/4]^2)/(
3 - 2*Sqrt[2])]*(1 - ((-3 + 2*Sqrt[2])*(c + d)*Tan[(e + f*x)/4]^2)/((3 - 2*
Sqrt[2])*(-3*c + 2*Sqrt[2]*Sqrt[c*(c - d)] + d)))))))/(8*c^3*d*(c + d)^3)))
```

fricas [A] time = 40.75, size = 3351, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [-1/8*((a^2*c^4*d^2 + 10*a^2*c^3*d^3 - 15*a^2*c^2*d^4 - 20*a^2*c*d^5 - 8*a^
2*d^6 + (a^2*c^6 + 10*a^2*c^5*d - 15*a^2*c^4*d^2 - 20*a^2*c^3*d^3 - 8*a^2*c
^2*d^4)*cos(f*x + e)^3 + (a^2*c^6 + 12*a^2*c^5*d + 5*a^2*c^4*d^2 - 50*a^2*c
^3*d^3 - 48*a^2*c^2*d^4 - 16*a^2*c*d^5)*cos(f*x + e)^2 + (2*a^2*c^5*d + 21*
a^2*c^4*d^2 - 20*a^2*c^3*d^3 - 55*a^2*c^2*d^4 - 36*a^2*c*d^5 - 8*a^2*d^6)*c
os(f*x + e))*sqrt(-a/(c*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2))*s
qrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2
*a*d)*cos(f*x + e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 +
(c + d)*cos(f*x + e) + d)) - 8*(a^2*c^2*d^3 + 2*a^2*c*d^4 + a^2*d^5 + (a^2*
c^4*d + 2*a^2*c^3*d^2 + a^2*c^2*d^3)*cos(f*x + e)^3 + (a^2*c^4*d + 4*a^2*c^
3*d^2 + 5*a^2*c^2*d^3 + 2*a^2*c*d^4)*cos(f*x + e)^2 + (2*a^2*c^3*d^2 + 5*a^
2*c^2*d^3 + 4*a^2*c*d^4 + a^2*d^5)*cos(f*x + e))*sqrt(-a)*log((2*a*cos(f*x
+ e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*si
n(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + 2*((a^2*c^5 - 12*a^2
*c^4*d + 5*a^2*c^3*d^2 + 6*a^2*c^2*d^3)*cos(f*x + e)^2 - (a^2*c^4*d + 10*a^
2*c^3*d^2 - 7*a^2*c^2*d^3 - 4*a^2*c*d^4)*cos(f*x + e))*sqrt((a*cos(f*x + e)
 + a)/cos(f*x + e))*sin(f*x + e))/((c^7*d + 2*c^6*d^2 + c^5*d^3)*f*cos(f*x
+ e)^3 + (c^7*d + 4*c^6*d^2 + 5*c^5*d^3 + 2*c^4*d^4)*f*cos(f*x + e)^2 + (2*
c^6*d^2 + 5*c^5*d^3 + 4*c^4*d^4 + c^3*d^5)*f*cos(f*x + e) + (c^5*d^3 + 2*c^
4*d^4 + c^3*d^5)*f), -1/8*(16*(a^2*c^2*d^3 + 2*a^2*c*d^4 + a^2*d^5 + (a^2*c
^4*d + 2*a^2*c^3*d^2 + a^2*c^2*d^3)*cos(f*x + e)^3 + (a^2*c^4*d + 4*a^2*c^3
*d^2 + 5*a^2*c^2*d^3 + 2*a^2*c*d^4)*cos(f*x + e)^2 + (2*a^2*c^3*d^2 + 5*a^2
*c^2*d^3 + 4*a^2*c*d^4 + a^2*d^5)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + (a^2*c^4
*d^2 + 10*a^2*c^3*d^3 - 15*a^2*c^2*d^4 - 20*a^2*c*d^5 - 8*a^2*d^6 + (a^2*c^
6 + 10*a^2*c^5*d - 15*a^2*c^4*d^2 - 20*a^2*c^3*d^3 - 8*a^2*c^2*d^4)*cos(f*x
 + e)^3 + (a^2*c^6 + 12*a^2*c^5*d + 5*a^2*c^4*d^2 - 50*a^2*c^3*d^3 - 48*a^2
*c^2*d^4 - 16*a^2*c*d^5)*cos(f*x + e)^2 + (2*a^2*c^5*d + 21*a^2*c^4*d^2 - 2
0*a^2*c^3*d^3 - 55*a^2*c^2*d^4 - 36*a^2*c*d^5 - 8*a^2*d^6)*cos(f*x + e))*sq
rt(-a/(c*d + d^2))*log((2*(c*d + d^2)*sqrt(-a/(c*d + d^2))*sqrt((a*cos(f*x
+ e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c + 2*a*d)*cos(f*x +
 e)^2 - a*d + (a*c + a*d)*cos(f*x + e))/(c*cos(f*x + e)^2 + (c + d)*cos(f*x
 + e) + d)) + 2*((a^2*c^5 - 12*a^2*c^4*d + 5*a^2*c^3*d^2 + 6*a^2*c^2*d^3)*c
os(f*x + e)^2 - (a^2*c^4*d + 10*a^2*c^3*d^2 - 7*a^2*c^2*d^3 - 4*a^2*c*d^4)*
cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/((c^7*d
 + 2*c^6*d^2 + c^5*d^3)*f*cos(f*x + e)^3 + (c^7*d + 4*c^6*d^2 + 5*c^5*d^3 +
 2*c^4*d^4)*f*cos(f*x + e)^2 + (2*c^6*d^2 + 5*c^5*d^3 + 4*c^4*d^4 + c^3*d^5
)*f*cos(f*x + e) + (c^5*d^3 + 2*c^4*d^4 + c^3*d^5)*f), -1/4*((a^2*c^4*d^2 +
 10*a^2*c^3*d^3 - 15*a^2*c^2*d^4 - 20*a^2*c*d^5 - 8*a^2*d^6 + (a^2*c^6 + 10
*a^2*c^5*d - 15*a^2*c^4*d^2 - 20*a^2*c^3*d^3 - 8*a^2*c^2*d^4)*cos(f*x + e)^
3 + (a^2*c^6 + 12*a^2*c^5*d + 5*a^2*c^4*d^2 - 50*a^2*c^3*d^3 - 48*a^2*c^2*d
^4 - 16*a^2*c*d^5)*cos(f*x + e)^2 + (2*a^2*c^5*d + 21*a^2*c^4*d^2 - 20*a^2*
c^3*d^3 - 55*a^2*c^2*d^4 - 36*a^2*c*d^5 - 8*a^2*d^6)*cos(f*x + e))*sqrt(a/(
c*d + d^2))*arctan((c + d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/co
s(f*x + e))*cos(f*x + e)/(a*sin(f*x + e))) - 4*(a^2*c^2*d^3 + 2*a^2*c*d^4 +
 a^2*d^5 + (a^2*c^4*d + 2*a^2*c^3*d^2 + a^2*c^2*d^3)*cos(f*x + e)^3 + (a^2*
c^4*d + 4*a^2*c^3*d^2 + 5*a^2*c^2*d^3 + 2*a^2*c*d^4)*cos(f*x + e)^2 + (2*a^
2*c^3*d^2 + 5*a^2*c^2*d^3 + 4*a^2*c*d^4 + a^2*d^5)*cos(f*x + e))*sqrt(-a)*l
og((2*a*cos(f*x + e)^2 - 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))
*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) + ((a^
2*c^5 - 12*a^2*c^4*d + 5*a^2*c^3*d^2 + 6*a^2*c^2*d^3)*cos(f*x + e)^2 - (a^2
*c^4*d + 10*a^2*c^3*d^2 - 7*a^2*c^2*d^3 - 4*a^2*c*d^4)*cos(f*x + e))*sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/((c^7*d + 2*c^6*d^2 + c^5*d
^3)*f*cos(f*x + e)^3 + (c^7*d + 4*c^6*d^2 + 5*c^5*d^3 + 2*c^4*d^4)*f*cos(f*
x + e)^2 + (2*c^6*d^2 + 5*c^5*d^3 + 4*c^4*d^4 + c^3*d^5)*f*cos(f*x + e) + (
c^5*d^3 + 2*c^4*d^4 + c^3*d^5)*f), -1/4*((a^2*c^4*d^2 + 10*a^2*c^3*d^3 - 15
```

```
*a^2*c^2*d^4 - 20*a^2*c*d^5 - 8*a^2*d^6 + (a^2*c^6 + 10*a^2*c^5*d - 15*a^2*
c^4*d^2 - 20*a^2*c^3*d^3 - 8*a^2*c^2*d^4)*cos(f*x + e)^3 + (a^2*c^6 + 12*a^
2*c^5*d + 5*a^2*c^4*d^2 - 50*a^2*c^3*d^3 - 48*a^2*c^2*d^4 - 16*a^2*c*d^5)*c
os(f*x + e)^2 + (2*a^2*c^5*d + 21*a^2*c^4*d^2 - 20*a^2*c^3*d^3 - 55*a^2*c^2
*d^4 - 36*a^2*c*d^5 - 8*a^2*d^6)*cos(f*x + e))*sqrt(a/(c*d + d^2))*arctan((
c + d)*sqrt(a/(c*d + d^2))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
+ e)/(a*sin(f*x + e))) + 8*(a^2*c^2*d^3 + 2*a^2*c*d^4 + a^2*d^5 + (a^2*c^4*
d + 2*a^2*c^3*d^2 + a^2*c^2*d^3)*cos(f*x + e)^3 + (a^2*c^4*d + 4*a^2*c^3*d^
2 + 5*a^2*c^2*d^3 + 2*a^2*c*d^4)*cos(f*x + e)^2 + (2*a^2*c^3*d^2 + 5*a^2*c^
2*d^3 + 4*a^2*c*d^4 + a^2*d^5)*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x
 + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + ((a^2*c^5 -
 12*a^2*c^4*d + 5*a^2*c^3*d^2 + 6*a^2*c^2*d^3)*cos(f*x + e)^2 - (a^2*c^4*d
+ 10*a^2*c^3*d^2 - 7*a^2*c^2*d^3 - 4*a^2*c*d^4)*cos(f*x + e))*sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*sin(f*x + e))/((c^7*d + 2*c^6*d^2 + c^5*d^3)*f*c
os(f*x + e)^3 + (c^7*d + 4*c^6*d^2 + 5*c^5*d^3 + 2*c^4*d^4)*f*cos(f*x + e)^
2 + (2*c^6*d^2 + 5*c^5*d^3 + 4*c^4*d^4 + c^3*d^5)*f*cos(f*x + e) + (c^5*d^3
 + 2*c^4*d^4 + c^3*d^5)*f)]
```

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((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^3,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)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: (4*pi/x/2)>(-4*pi/x/2)Unable to check s
ign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unab
le to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-
4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign:
(4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
 check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/
x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi
/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to chec
k sign: (4*pi/x/2)>(-4*pi/x/2)4*((-241785163922925834941235 2*a^6*sqrt(-a)*c
^4*sign(cos(f*x+exp(1)))+967140655691703339764940 8*a^6*sqrt(-a)*d^4*sign(co
s(f*x+exp(1)))-2417851639229258349412352*a^3*sqrt(-a)*c^4*(sqrt(-a*tan(1/2*
(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))-
29014219670751100192948224*a^3*sqrt(-a)*d^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^
2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))-72535549176877
75048237056*a^4*sqrt(-a)*c^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*t
an(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1)))+183756724581423634555338752*a
^4*sqrt(-a)*d^4*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+e
xp(1))))^4*sign(cos(f*x+exp(1)))-7253554917687775048237056*a^5*sqrt(-a)*c^4
*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign
```

```
(cos(f*x+exp(1)))-87042659012253300578844672*a^5*sqrt(-a)*d^4*(sqrt(-a*tan(
1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1
)))+2417851639229258349412352*a^6*sqrt(-a)*c*d^3*sign(cos(f*x+exp(1)))-3626
7774588438875241185280*a^6*sqrt(-a)*c^2*d^2*sign(cos(f*x+exp(1)))+265963680
31521841843535872*a^6*sqrt(-a)*c^3*d*sign(cos(f*x+exp(1)))-2659636803152184
1843535872*a^3*sqrt(-a)*c*d^3*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*
tan(1/2*(f*x+exp(1))))^6*sign(cos(f*x+exp(1)))+60446290980731458735308800*a
^3*sqrt(-a)*c^2*d^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f
*x+exp(1))))^6*sign(cos(f*x+exp(1)))-2417851639229258349412352*a^3*sqrt(-a)
*c^3*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^
6*sign(cos(f*x+exp(1)))+510166695877373511726006272*a^4*sqrt(-a)*c*d^3*(sqr
t(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(
f*x+exp(1)))+200681686056028443001225216*a^4*sqrt(-a)*c^2*d^2*(sqrt(-a*tan(
1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1
)))+41103477866897391940009984*a^4*sqrt(-a)*c^3*d*(sqrt(-a*tan(1/2*(f*x+exp
(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^4*sign(cos(f*x+exp(1)))-15716035
6549901792711802880*a^5*sqrt(-a)*c*d^3*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-
sqrt(-a)*tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1)))+1813388729421943762
05926400*a^5*sqrt(-a)*c^2*d^2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*
tan(1/2*(f*x+exp(1))))^2*sign(cos(f*x+exp(1)))+70117697537648492132958208*a
^5*sqrt(-a)*c^3*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x
+exp(1))))^2*sign(cos(f*x+exp(1))))/(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-
sqrt(-a)*tan(1/2*(f*x+exp(1))))^4-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqr
t(-a)*tan(1/2*(f*x+exp(1))))^4+2*a*c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sq
rt(-a)*tan(1/2*(f*x+exp(1))))^2+6*a*d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-s
qrt(-a)*tan(1/2*(f*x+exp(1))))^2+a^2*c-a^2*d)^2/(-9671406556917033397649408
*sqrt(2)*c^2*d^3-19342813113834066795298816*sqrt(2)*c^3*d^2-967140655691703
3397649408*sqrt(2)*c^4*d)+1/38685626227668133590597632*(4676805239458889338
2517914646921056628989841375232*a^3*sqrt(-a)*c^4*sign(cos(f*x+exp(1)))-3741
44419156711147060143317175368453031918731001856*a^3*sqrt(-a)*d^4*sign(cos(f
*x+exp(1)))-935361047891777867650358292938421132579796827504640*a^3*sqrt(-a
)*c*d^3*sign(cos(f*x+exp(1)))-701520785918833400737768719703815849434847620
628480*a^3*sqrt(-a)*c^2*d^2*sign(cos(f*x+exp(1)))+4676805239458889338251791
46469210566289898413752320*a^3*sqrt(-a)*c^3*d*sign(cos(f*x+exp(1))))*atan(1
/2*(c*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2
-d*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))))^2+a*
c+3*a*d)/sqrt(2)/sqrt(-d^2-c*d)/a)/sqrt(2)/sqrt(-d^2-c*d)/a/(96714065569170
33397649408*sqrt(2)*c^3*d^3+19342813113834066795298816*sqrt(2)*c^4*d^2+9671
406556917033397649408*sqrt(2)*c^5*d)-1/4*a^3*sqrt(-a)*sign(cos(f*x+exp(1)))
*ln(abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-a)*tan(1/2*(f*x+exp(1))
))^2-4*sqrt(2)*abs(a)-6*a)/abs(2*(sqrt(-a*tan(1/2*(f*x+exp(1)))^2+a)-sqrt(-
a)*tan(1/2*(f*x+exp(1))))^2+4*sqrt(2)*abs(a)-6*a))/c^3/abs(a))/f
```

maple [B] time = 8.15, size = 209489, normalized size = 390.84

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^3,x)
[Out] result too large to display
```

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((a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x))^3,x)
[Out] int((a + a/cos(e + f*x))^(5/2)/(c + d/cos(e + f*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((a+a*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e))**3,x)
[Out] Timed out
```

3.166 $\int \frac{(c+d\sec(e+fx))^3}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=258

$$\frac{2\sqrt{a}\,c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2d^2(3c-d)\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}-\frac{\sqrt{2}\,\sqrt{a}\,(c-d)^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}$$

```
[Out] 2*(3*c-d)*d^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2*d^3*tan(f*x+e)/f/(a+a*s
ec(f*x+e))^(1/2)-2/3*d^3*(1-sec(f*x+e))*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)
+2*c^3*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*a^(1/2)*tan(f*x+e)/f/(a-a*se
c(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-(c-d)^3*arctanh(1/2*(a-a*sec(f*x+e))
^(1/2)*2^(1/2)/a^(1/2))*2^(1/2)*a^(1/2)*tan(f*x+e)/f/(a-a*sec(f*x+e))^(1/2)
/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3940, 180, 63, 206, 43}

$$\frac{2\sqrt{a}\,c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2d^2(3c-d)\tan(e+fx)}{f\sqrt{a\sec(e+fx)+a}}-\frac{\sqrt{2}\,\sqrt{a}\,(c-d)^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])^3/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*(3*c - d)*d^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*d^3*Tan[e
+ f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) - (2*d^3*(1 - Sec[e + f*x])*Tan[e + f*
x])/(3*f*Sqrt[a + a*Sec[e + f*x]]) + (2*Sqrt[a]*c^3*ArcTanh[Sqrt[a - a*Sec[
e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec
[e + f*x]]) - (Sqrt[2]*Sqrt[a]*(c - d)^3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(
Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[
e + f*x]])
```

Rule 43

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

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^3}{\sqrt{a+a\sec(e+fx)}}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(c+dx)^3}{x\sqrt{a-ax}\,(a+ax)}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{(3c-d)d^2}{a\sqrt{a-ax}}+\frac{c^3}{ax\sqrt{a-ax}}+\frac{d^3x}{a\sqrt{a-ax}}-\frac{(c-d)^3}{a(1+x)\sqrt{a-ax}}\right)dx,x,\text{sec}}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2(3c-d)d^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{\left(ac^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2(3c-d)d^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{\left(2c^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{1-\frac{x^2}{a}}\,dx,x,\sqrt{a-a\sec(e+}\right.}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2(3c-d)d^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2d^3\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{2d^3(1-\sec(e+fx))\tan(e+f}{3f\sqrt{a+a\sec(e+fx)}}$$

Mathematica [C] time = 7.24, size = 787, normalized size = 3.05

$$2\sqrt{\frac{1}{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}}\sqrt{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}\cos\left(\frac{1}{2}(e+fx)\right)(c+d\sec(e+fx))^3\left(-\frac{(c-d)^3\csc^5\left(\frac{1}{2}(e+fx)\right)\left(-12\sin^8\left(\frac{1}{2}(e\right.\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])^3/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*Cos[(e + f*x)/2]*(c + d*Sec[e + f*x])^3*Sqrt[(1 - 2*Sin[(e + f*x)/2]^2)^
(-1)]*Sqrt[1 - 2*Sin[(e + f*x)/2]^2]*((2*c*(c^2 + 3*d^2)*Sin[(e + f*x)/2])/
(3*(1 - 2*Sin[(e + f*x)/2]^2)^(3/2)) - (4*c^2*(c + 3*d)*Sin[(e + f*x)/2]^3)
/(3*(1 - 2*Sin[(e + f*x)/2]^2)^(3/2)) + (4*c*(c^2 + 3*d^2)*Sin[(e + f*x)/2]
)/(3*Sqrt[1 - 2*Sin[(e + f*x)/2]^2]) + (c^3*Csc[(e + f*x)/2]*Sqrt[1 - 2*Sin
[(e + f*x)/2]^2]*((4*Sin[(e + f*x)/2]^4)/(1 - 2*Sin[(e + f*x)/2]^2)^2 - (6*
Sin[(e + f*x)/2]^2)/(1 - 2*Sin[(e + f*x)/2]^2) + (3*Sqrt[2]*ArcSin[Sqrt[2]*
Sin[(e + f*x)/2]]*Sin[(e + f*x)/2])/Sqrt[1 - 2*Sin[(e + f*x)/2]^2]))/3 - ((
c - d)^3*Csc[(e + f*x)/2]^5*(-12*Cos[(e + f*x)/2]^4*HypergeometricPFQ[{2, 2
, 7/2}, {1, 9/2}, -(Sin[(e + f*x)/2]^2/(1 - 2*Sin[(e + f*x)/2]^2))]*Sin[(e
```

```
+ f*x)/2]^8 - 12*Hypergeometric2F1[2, 7/2, 9/2, -(Sin[(e + f*x)/2]^2/(1 - 2
*Sin[(e + f*x)/2]^2))]*Sin[(e + f*x)/2]^8*(4 - 7*Sin[(e + f*x)/2]^2 + 3*Sin
[(e + f*x)/2]^4) + 7*Sqrt[-(Sin[(e + f*x)/2]^2/(1 - 2*Sin[(e + f*x)/2]^2))]
*(1 - 2*Sin[(e + f*x)/2]^2)^3*(15 - 20*Sin[(e + f*x)/2]^2 + 8*Sin[(e + f*x)
/2]^4)*((3 - 7*Sin[(e + f*x)/2]^2)*Sqrt[-(Sin[(e + f*x)/2]^2/(1 - 2*Sin[(e
+ f*x)/2]^2))] - 3*ArcTanh[Sqrt[-(Sin[(e + f*x)/2]^2/(1 - 2*Sin[(e + f*x)/2
]^2))]]*(1 - 2*Sin[(e + f*x)/2]^2))))/(63*(1 - 2*Sin[(e + f*x)/2]^2)^(7/2))
))/(f*(d + c*Cos[e + f*x])^3*Sec[e + f*x]^(5/2)*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 13.68, size = 619, normalized size = 2.40

$$\left[-\frac{3\sqrt{2}\left(\left(ac^3 - 3ac^2d + 3acd^2 - ad^3\right)\cos\left(fx+e\right)^2 + \left(ac^3 - 3ac^2d + 3acd^2 - ad^3\right)\cos\left(fx+e\right)\right)\sqrt{-\frac{1}{a}}\log\left(-\frac{2\sqrt{}\cdots}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*sqrt(2)*((a*c^3 - 3*a*c^2*d + 3*a*c*d^2 - a*d^3)*cos(f*x + e)^2 +
(a*c^3 - 3*a*c^2*d + 3*a*c*d^2 - a*d^3)*cos(f*x + e))*sqrt(-1/a)*log(-(2*sq
rt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x + e)*sin(f
*x + e) - 3*cos(f*x + e)^2 - 2*cos(f*x + e) + 1)/(cos(f*x + e)^2 + 2*cos(f*
x + e) + 1)) + 6*(c^3*cos(f*x + e)^2 + c^3*cos(f*x + e))*sqrt(-a)*log((2*a*
cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x
 + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 4*(d^3 + (9*
c*d^2 - d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x
+ e))/(a*f*cos(f*x + e)^2 + a*f*cos(f*x + e)), -1/3*(6*(c^3*cos(f*x + e)^2
+ c^3*cos(f*x + e))*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*
cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 2*(d^3 + (9*c*d^2 - d^3)*cos(f*x + e
))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 3*sqrt(2)*((a*c^3
 - 3*a*c^2*d + 3*a*c*d^2 - a*d^3)*cos(f*x + e)^2 + (a*c^3 - 3*a*c^2*d + 3*a
*c*d^2 - a*d^3)*cos(f*x + e))*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/sqrt(a))/(a*f*cos(f*x + e)^2
 + a*f*cos(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((c+d*sec(f*x+e))^3/(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
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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/t_nostep/2)>(
```

```
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
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ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
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ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
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le to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
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)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep
/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to chec
k sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_n
ostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t
_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable
to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4
*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(
-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check s
ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nost
ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi
/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*
pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
```

```
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to che
ck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/x/
2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check s
ign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unab
le to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-
4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign:
(4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nost
ep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/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)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign:
(2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes constant
sign by intervals (correct if the argument is real):Check [abs(t_nostep^2-1
)]Evaluation time: 1.77index.cc index_m i_lex_is_greater Error: Bad Argumen
t Value
```

maple [B] time = 1.91, size = 907, normalized size = 3.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/6/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(3*(-2*cos(f*x+e)/(1+cos(f*x+e)))
^(3/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+
e)*2^(1/2))*sin(f*x+e)*cos(f*x+e)*2^(1/2)*c^3+3*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(3/2)*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+
e)/cos(f*x+e)*2^(1/2))*c^3*sin(f*x+e)+3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2
)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f
*x+e))*sin(f*x+e)*cos(f*x+e)*c^3-9*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(
-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e)
)*sin(f*x+e)*cos(f*x+e)*c^2*d+9*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(-(-
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*s
in(f*x+e)*cos(f*x+e)*c*d^2-3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(-(-(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*sin(
f*x+e)*cos(f*x+e)*d^3+3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(-(-(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^3*sin(f
*x+e)-9*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^2*d*sin(f*x+e)+9*(-2*co
s(f*x+e)/(1+cos(f*x+e)))^(3/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*s
in(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d^2*sin(f*x+e)-3*(-2*cos(f*x+e)/(1+co
s(f*x+e)))^(3/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(
f*x+e)-1)/sin(f*x+e))*d^3*sin(f*x+e)-36*cos(f*x+e)^2*c*d^2+4*cos(f*x+e)^2*d
^3+36*cos(f*x+e)*c*d^2-8*cos(f*x+e)*d^3+4*d^3)/sin(f*x+e)/cos(f*x+e)/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found %i
```

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

$$\int \frac{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^3}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^3/(a + a/cos(e + f*x))^(1/2),x)
[Out] int((c + d/cos(e + f*x))^3/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(c+d\sec\left(e+fx\right)\right)^3}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**3/(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral((c + d*sec(e + f*x))**3/sqrt(a*(sec(e + f*x) + 1)), x)
```

3.167 $\int \frac{(c+d\sec(e+fx))^2}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=183

$$\frac{2\sqrt{a}\,c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\frac{\sqrt{2}\,\sqrt{a}\,(c-d)^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\,\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2d^2\tan(e+}{f\sqrt{a\sec(e+f}}$$

```
[Out] 2*d^2*tan(f*x+e)/f/(a+a*sec(f*x+e))^(1/2)+2*c^2*arctanh((a-a*sec(f*x+e))^(1
/2)/a^(1/2))*a^(1/2)*tan(f*x+e)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(
1/2)-(c-d)^2*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*2^(1/2)*a^
(1/2)*tan(f*x+e)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {3940, 180, 63, 206}

$$\frac{2\sqrt{a}\,c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}-\frac{\sqrt{2}\,\sqrt{a}\,(c-d)^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\,\sqrt{a}}\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{2d^2\tan(e+}{f\sqrt{a\sec(e+f}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])^2/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*d^2*Tan[e + f*x])/(f*Sqrt[a + a*Sec[e + f*x]]) + (2*Sqrt[a]*c^2*ArcTanh[
Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(f*Sqrt[a - a*Sec[e + f*x]]
*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*Sqrt[a]*(c - d)^2*ArcTanh[Sqrt[a - a*
Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(f*Sqrt[a - a*Sec[e + f*x]]*
Sqrt[a + a*Sec[e + f*x]])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

```
&& IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^2}{\sqrt{a+a\sec(e+fx)}}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(c+dx)^2}{x\sqrt{a-ax}\,(a+ax)}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$
$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{d^2}{a\sqrt{a-ax}}+\frac{c^2}{ax\sqrt{a-ax}}-\frac{(c-d)^2}{a(1+x)\sqrt{a-ax}}\right)dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$
$$= \frac{2d^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} - \frac{\left(ac^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}} + \frac{\left(a(\right.}{}$$
$$= \frac{2d^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{\left(2c^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{1-\frac{x^2}{a}}\,dx, x, \sqrt{a-a\sec(e+fx)}\right)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$
$$= \frac{2d^2\tan(e+fx)}{f\sqrt{a+a\sec(e+fx)}} + \frac{2\sqrt{a}\,c^2\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}} - \frac{\sqrt{2}\sqrt{a}\,(c-d)^2}{f\sqrt{a-a\,\mathrm{s}}}$$

Mathematica [C] time = 2.50, size = 295, normalized size = 1.61

$$\frac{2\cos\left(\frac{1}{2}(e+fx)\right)\cos^{\frac{3}{2}}(e+fx)(c+d\sec(e+fx))^2\left(c^2\left(\sqrt{2}\sin^{-1}\left(\sqrt{2}\sin\left(\frac{1}{2}(e+fx)\right)\right)-\frac{2\sin\left(\frac{1}{2}(e+fx)\right)}{\sqrt{\cos(e+fx)}}\right)-\frac{(c-d)^2\sin(}{}\right.}{f}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])^2/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*Cos[(e + f*x)/2]*Cos[e + f*x]^(3/2)*(c + d*Sec[e + f*x])^2*(-1/2*((c - d
)^2*Sqrt[-1 + Cos[e + f*x]]*(2 + Cos[e + f*x])*Csc[(e + f*x)/2]^3*(-2*ArcTa
nh[Sqrt[-(Sec[e + f*x]*Sin[(e + f*x)/2]^2)]] + Sqrt[2 - 2*Sec[e + f*x]]))/S
qrt[2] + (4*c*d*Sin[(e + f*x)/2])/Sqrt[Cos[e + f*x]] + c^2*(Sqrt[2]*ArcSin[
Sqrt[2]*Sin[(e + f*x)/2]] - (2*Sin[(e + f*x)/2])/Sqrt[Cos[e + f*x]]) - ((c
- d)^2*Hypergeometric2F1[2, 5/2, 7/2, -(Sec[e + f*x]*Sin[(e + f*x)/2]^2)]*S
in[(e + f*x)/2]*Sin[e + f*x]^2)/(10*Cos[e + f*x]^(5/2))))/(f*(d + c*Cos[e +
 f*x])^2*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 3.35, size = 481, normalized size = 2.63

$$\left[\frac{4\,d^2\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sin(fx+e)+\sqrt{2}\left(ac^2-2\,acd+ad^2+\left(ac^2-2\,acd+ad^2\right)\cos(fx+e)\right)\sqrt{-\frac{1}{a}}\log\left(\frac{2\sqrt{2}\sqrt{\frac{a\cos(}{\cos(}}}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(4*d^2*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) + sqrt(2)*
(a*c^2 - 2*a*c*d + a*d^2 + (a*c^2 - 2*a*c*d + a*d^2)*cos(f*x + e))*sqrt(-1/
a)*log((2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f*
x + e)*sin(f*x + e) + 3*cos(f*x + e)^2 + 2*cos(f*x + e) - 1)/(cos(f*x + e)^
2 + 2*cos(f*x + e) + 1)) - 2*(c^2*cos(f*x + e) + c^2)*sqrt(-a)*log((2*a*cos
(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/(a*f*cos(f*x + e
) + a*f), (2*d^2*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e) - 2*(
c^2*cos(f*x + e) + c^2)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x +
e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + sqrt(2)*(a*c^2 - 2*a*c*d + a*d^2
 + (a*c^2 - 2*a*c*d + a*d^2)*cos(f*x + e))*arctan(sqrt(2)*sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/sqrt(a))/(a*f*c
os(f*x + e) + a*f)]
```

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((c+d*sec(f*x+e))^2/(a+a*sec(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)
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
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/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
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integration of abs or sign assumes constant sign by intervals (correct if t
he argument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.34index.cc
 index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.69, size = 358, normalized size = 1.96

$$-\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{2}\,c^{2}\sin\left(fx+e\right)+\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\ \ln\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*((-2*cos(f*x+e)/(1+cos(f*x+e)))^(1
/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*
2^(1/2))*2^(1/2)*c^2*sin(f*x+e)+(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c
^2*sin(f*x+e)-2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(
```

```
1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d*sin(f*x+e)+(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*d^2*sin(f*x+e)+2*cos(f*x+e)*d^2-2*d
^2)/sin(f*x+e)/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found %i
```

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

$$\int \frac{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^2}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^2/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c + d/cos(e + f*x))^2/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(c+d\sec\left(e+fx\right)\right)^2}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**2/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral((c + d*sec(e + f*x))**2/sqrt(a*(sec(e + f*x) + 1)), x)
```

3.168 $\int \frac{c+d\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=91

$$\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}\,f}-\frac{\sqrt{2}\,(c-d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}\,f}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/f/a^(1/2)-(c-d)*arcta
n(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/f/a^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 91, 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 = {3920, 3774, 203, 3795}

$$\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}\,f}-\frac{\sqrt{2}\,(c-d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}\,f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*f) -
 (Sqrt[2]*(c - d)*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e +
 f*x]])])/(Sqrt[a]*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 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3795

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Dist[-2/f, Subst[Int[1/(2*a + x^2), x], x, (b*Cot[e + f*x])/Sqrt[
a + b*Csc[e + f*x]]], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3920

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c/a, Int[Sqrt[a + b*Csc[e + f*x]], x], x] - D
ist[(b*c - a*d)/a, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{c+d\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx = \frac{c\int \sqrt{a+a\sec(e+fx)}\,dx}{a} - (c-d)\int \frac{\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx$$

$$= -\frac{(2c)\operatorname{Subst}\left(\int \frac{1}{a+x^2}\,dx, x, -\frac{a\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{f} + \frac{(2(c-d))\operatorname{Subst}\left(\int \frac{1}{2a+x^2}\,dx, x, -\frac{a\tan(}{\sqrt{a+a\,\mathrm{se}}}\right.}{f}$$

$$= \frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,f} - \frac{\sqrt{2}(c-d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,f}$$

Mathematica [A] time = 0.29, size = 92, normalized size = 1.01

$$\frac{2\cos\left(\frac{1}{2}(e+fx)\right)\left((d-c)\tan^{-1}\left(\frac{\sin\left(\frac{1}{2}(e+fx)\right)}{\sqrt{\cos(e+fx)}}\right)+\sqrt{2}c\sin^{-1}\left(\sqrt{2}\sin\left(\frac{1}{2}(e+fx)\right)\right)\right)}{f\sqrt{\cos(e+fx)}\sqrt{a(\sec(e+fx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*Sec[e + f*x])/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*(Sqrt[2]*c*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]] + (-c + d)*ArcTan[Sin[(e + f
*x)/2]/Sqrt[Cos[e + f*x]]])*Cos[(e + f*x)/2])/(f*Sqrt[Cos[e + f*x]]*Sqrt[a*
(1 + Sec[e + f*x])])
```

fricas [A] time = 1.23, size = 314, normalized size = 3.45

$$\left[-\frac{\sqrt{2}(ac-ad)\sqrt{-\frac{1}{a}}\log\left(-\frac{2\sqrt{2}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{-\frac{1}{a}}\cos(fx+e)\sin(fx+e)-3\cos(fx+e)^2-2\cos(fx+e)+1}{\cos(fx+e)^2+2\cos(fx+e)+1}\right)+2\sqrt{-a}\,c\log\left(\frac{2a\cos(fx}{}\right.}{2af}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(2)*(a*c - a*d)*sqrt(-1/a)*log(-(2*sqrt(2)*sqrt((a*cos(f*x + e)
+ a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) - 3*cos(f*x + e)^2
- 2*cos(f*x + e) + 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 2*sqrt(-a)*c
*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))/(a*
f), -(2*sqrt(a)*c*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)/(sqrt(a)*sin(f*x + e))) - sqrt(2)*(a*c - a*d)*arctan(sqrt(2)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e)))/sqrt(a))/
(a*f)]
```

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((c+d*sec(f*x+e))/(a+a*sec(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)
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
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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integratio
n of abs or sign assumes constant sign by intervals (correct if the argumen
t is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t
_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi
/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unabl
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tep/2)Warning, assuming -2*a+a is positive. Hint: run assume to make assump
tions on a variableWarning, assuming -2*a+a is positive. Hint: run assume t
o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
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ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Un
able to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Discontinuities at
zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
```

```
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sig
n: (2*pi/t_nostep/2)>(-2*pi/t_nostep/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: (
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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)Wa
rning, integration of abs or sign assumes constant sign by intervals (corre
ct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.18i
ndex.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.50, size = 194, normalized size = 2.13

$$-\frac{\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\left(c\ln\left(-\frac{-\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\sin(fx+e)+\cos(fx+e)-1}{\sin(fx+e)}\right)-d\ln\left(-\frac{-\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\sin(fx+e)+\cos}{\sin(fx+e)}\right.\right.}{fa}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*(c*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/s
in(f*x+e))-d*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+
e)-1)/sin(f*x+e))+c*2^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*sin(f*x+e)/cos(f*x+e)*2^(1/2)))/a
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 sign: argument cannot be imaginary; found %i
```

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

$$\int \frac{c+\frac{d}{\cos(e+fx)}}{\sqrt{a+\frac{a}{\cos(e+fx)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c + d/cos(e + f*x))/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{c+d\sec(e+fx)}{\sqrt{a(\sec(e+fx)+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral((c + d*sec(e + f*x))/sqrt(a*(sec(e + f*x) + 1)), x)
```

3.169 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))}\,dx$

Optimal. Leaf size=166

$$\frac{2d^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}cf(c-d)\sqrt{c+d}}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f(c-d)}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}cf}$$

```
[Out] 2*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/c/f/a^(1/2)-arctan(1/2*
a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))*2^(1/2)/(c-d)/f/a^(1/2)+
2*d^(3/2)*arctan(a^(1/2)*d^(1/2)*tan(f*x+e)/(c+d)^(1/2)/(a+a*sec(f*x+e))^(1
/2))/c/(c-d)/f/a^(1/2)/(c+d)^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {3929, 3920, 3774, 203, 3795, 3967, 205}

$$\frac{2d^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}cf(c-d)\sqrt{c+d}}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}f(c-d)}+\frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{\sqrt{a}cf}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(Sqrt[a]*c*f) -
 (Sqrt[2]*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]])]
)/(Sqrt[a]*(c - d)*f) + (2*d^(3/2)*ArcTan[(Sqrt[a]*Sqrt[d]*Tan[e + f*x])/(S
qrt[c + d]*Sqrt[a + a*Sec[e + f*x]])])/(Sqrt[a]*c*(c - d)*Sqrt[c + d]*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 205

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

Rule 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3795

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Dist[-2/f, Subst[Int[1/(2*a + x^2), x], x, (b*Cot[e + f*x])/Sqrt[
a + b*Csc[e + f*x]]], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3920

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c/a, Int[Sqrt[a + b*Csc[e + f*x]], x], x] - D
ist[(b*c - a*d)/a, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; Fre
```

```
eQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rule 3929

```
Int[1/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*
(d_.) + (c_))), x_Symbol] :> Dist[1/(c*(b*c - a*d)), Int[(b*c - a*d - b*d*C
sc[e + f*x])/Sqrt[a + b*Csc[e + f*x]], x], x] + Dist[d^2/(c*(b*c - a*d)), I
nt[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]])/(c + d*Csc[e + f*x]), x], x] /;
FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && (EqQ[a^2 - b^2, 0] ||
EqQ[c^2 - d^2, 0])
```

Rule 3967

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/(c
sc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)), x_Symbol] :> Dist[(-2*b)/f, Subst[Int
[1/(b*c + a*d + d*x^2), x], x, (b*Cot[e + f*x])/Sqrt[a + b*Csc[e + f*x]]],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0
]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))}\,dx = \frac{\int \frac{ac-ad-ad\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx}{ac(c-d)} + \frac{d^2\int \frac{\sec(e+fx)\sqrt{a+a\sec(e+fx)}}{c+d\sec(e+fx)}\,dx}{ac(c-d)}$$

$$= \frac{\int \sqrt{a+a\sec(e+fx)}\,dx}{ac} - \frac{\int \frac{\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx}{c-d} - \frac{\left(2d^2\right)\text{Subst}\Big(}{}$$

$$= \frac{2d^{3/2}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{c+d}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,c(c-d)\sqrt{c+d}\,f} - \frac{2\,\text{Subst}\left(\int \frac{1}{a+x^2}\,dx, x, -\frac{a\tan}{\sqrt{a+}}\right.}{cf}$$

$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,cf} - \frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{\sqrt{a}\,(c-d)f} + \frac{2d^{3/2}}{}$$

Mathematica [C] time = 39.13, size = 431980, normalized size = 2602.29

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])),x]
```

```
[Out] Result too large to show
```

fricas [A] time = 18.62, size = 1050, normalized size = 6.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(2)*a*c*sqrt(-1/a)*log(-(2*sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos
(f*x + e))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) - 3*cos(f*x + e)^2 - 2*cos(
f*x + e) + 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 2*a*d*sqrt(-d/(a*c +
 a*d))*log((2*(c + d)*sqrt(-d/(a*c + a*d))*sqrt((a*cos(f*x + e) + a)/cos(f*
```

```
x + e))*cos(f*x + e)*sin(f*x + e) + (c + 2*d)*cos(f*x + e)^2 + (c + d)*cos(
f*x + e) - d)/(c*cos(f*x + e)^2 + (c + d)*cos(f*x + e) + d)) + 2*sqrt(-a)*(
c - d)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f
*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)
))/((a*c^2 - a*c*d)*f), -1/2*(sqrt(2)*a*c*sqrt(-1/a)*log(-(2*sqrt(2)*sqrt((
a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(-1/a)*cos(f*x + e)*sin(f*x + e) - 3*
cos(f*x + e)^2 - 2*cos(f*x + e) + 1)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1))
 + 4*a*d*sqrt(d/(a*c + a*d))*arctan((c + d)*sqrt(d/(a*c + a*d))*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(d*sin(f*x + e))) + 2*sqrt(-a)*(c
 - d)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*
x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1))
)/((a*c^2 - a*c*d)*f), -(a*d*sqrt(-d/(a*c + a*d))*log((2*(c + d)*sqrt(-d/(a
*c + a*d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e
) + (c + 2*d)*cos(f*x + e)^2 + (c + d)*cos(f*x + e) - d)/(c*cos(f*x + e)^2
+ (c + d)*cos(f*x + e) + d)) - sqrt(2)*sqrt(a)*c*arctan(sqrt(2)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + 2*sqrt(
a)*(c - d)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqr
t(a)*sin(f*x + e))))/((a*c^2 - a*c*d)*f), -(2*a*d*sqrt(d/(a*c + a*d))*arcta
n((c + d)*sqrt(d/(a*c + a*d))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f
*x + e)/(d*sin(f*x + e))) - sqrt(2)*sqrt(a)*c*arctan(sqrt(2)*sqrt((a*cos(f*
x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + 2*sqrt(a)*
(c - d)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a
)*sin(f*x + e))))/((a*c^2 - a*c*d)*f)]
```

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(1/(c+d*sec(f*x+e))/(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
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able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integratio
n of abs or sign assumes constant sign by intervals (correct if the argumen
t is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t
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```
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 check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assu
mes constant sign by intervals (correct if the argument is real):Check [abs
(t_nostep^2-1)]Evaluation time: 1.08index.cc index_m i_lex_is_greater Error
: Bad Argument Value
```

maple [B] time = 2.05, size = 662, normalized size = 3.99

$$-\frac{\left(2\sqrt{(c+d)(c-d)}\,\sqrt{2}\,\sqrt{\frac{d}{c-d}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos(fx+e)}{1+\cos(fx+e)}}\,\sin(fx+e)\sqrt{2}}{2\cos(fx+e)}\right)c-2\sqrt{(c+d)(c-d)}\,\sqrt{2}\,\sqrt{\frac{d}{c-d}}\,\operatorname{arctanh}\left(\sqrt{-\frac{2c}{1+}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -1/2/f*(2*((c+d)*(c-d))^(1/2)*2^(1/2)*(d/(c-d))^(1/2)*arctanh(1/2*(-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c-2*((c+d)*(c-d)
)^(1/2)*2^(1/2)*(d/(c-d))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^
(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*d+2*((c+d)*(c-d))^(1/2)*ln(-(-(-2*cos(
```

```
f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*(d/(c-d))
^(1/2)*c+2^(1/2)*ln(2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)*cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+
e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(
f*x+e)+c-d))*d^2-2^(1/2)*ln(-2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2)
*cos(f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)+c*cos(f*x+
e)-d*cos(f*x+e)-c+d))*d^2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*(a*(1+cos(f
*x+e))/cos(f*x+e))^(1/2)/(d/(c-d))^(1/2)/(c-d)/c/((c+d)*(c-d))^(1/2)/a
```

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

$$\int \frac{1}{\sqrt{a\sec\left(fx+e\right)+a}\left(d\sec\left(fx+e\right)+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(1/(sqrt(a*sec(f*x + e) + a)*(d*sec(f*x + e) + c)), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))),x)
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))), x)
```

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

$$\int \frac{1}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}\left(c+d\sec\left(e+fx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral(1/(sqrt(a*(sec(e + f*x) + 1))*(c + d*sec(e + f*x))), x)
```

3.170 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=416

$$\frac{2\sqrt{a}\,d^{3/2}(2c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^2f(c-d)^2\sqrt{c+d}\,\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+\frac{d^2\tan(e+fx)}{cf\left(c^2-d^2\right)\sqrt{a\sec(e+fx)+a}\,(c+d\sec(e+fx))}+$$

```
[Out] d^2*tan(f*x+e)/c/(c^2-d^2)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*arct
anh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*a^(1/2)*tan(f*x+e)/c^2/f/(a-a*sec(f*x+e
))^(1/2)/(a+a*sec(f*x+e))^(1/2)+d^(3/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1
/2)/a^(1/2)/(c+d)^(1/2))*a^(1/2)*tan(f*x+e)/c/(c-d)/(c+d)^(3/2)/f/(a-a*sec(
f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(
1/2)/a^(1/2))*2^(1/2)*a^(1/2)*tan(f*x+e)/(c-d)^2/f/(a-a*sec(f*x+e))^(1/2)/(
a+a*sec(f*x+e))^(1/2)+2*(2*c-d)*d^(3/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1
/2)/a^(1/2)/(c+d)^(1/2))*a^(1/2)*tan(f*x+e)/c^2/(c-d)^2/f/(c+d)^(1/2)/(a-a*
sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 416, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 180, 63, 206, 51, 208}

$$\frac{d^2\tan(e+fx)}{cf\left(c^2-d^2\right)\sqrt{a\sec(e+fx)+a}\,(c+d\sec(e+fx))}+\frac{2\sqrt{a}\,d^{3/2}(2c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\,\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\,\sqrt{c+d}}\right)}{c^2f(c-d)^2\sqrt{c+d}\,\sqrt{a-a\sec(e+fx)}\,\sqrt{a\sec(e+fx)+a}}+$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^2),x]
```

```
[Out] (2*Sqrt[a]*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^2*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*Sqrt[a]*ArcTan
h[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/((c - d)^2*f*Sq
rt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (Sqrt[a]*d^(3/2)*ArcTanh
[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(c
*(c - d)*(c + d)^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
 + (2*Sqrt[a]*(2*c - d)*d^(3/2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/
(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(c^2*(c - d)^2*Sqrt[c + d]*f*Sqrt[a -
a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (d^2*Tan[e + f*x])/(c*(c^2 - d^
2)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)(c+dx)^2}\,dx, x, \sec(e+f\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{1}{ac^2x\sqrt{a-ax}} - \frac{1}{a(c-d)^2(1+x)\sqrt{a-ax}} + \ldots\right.\right.}{f\sqrt{a-a\sec(e+fx)}\ldots}$$

$$= -\frac{(a\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{(a\tan\ldots}{(c\ldots}$$

$$= \frac{d^2\tan(e+fx)}{c\left(c^2-d^2\right)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))} + \frac{(2\tan(e\ldots}{c\ldots}$$

$$= \frac{2\sqrt{a}\,\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{\sqrt{2}\sqrt{a}\,\tanh^{-}\ldots}{(c-d)^2f\sqrt{a-a\ldots}}$$

$$= \frac{2\sqrt{a}\,\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^2f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{\sqrt{2}\sqrt{a}\,\tanh^{-}\ldots}{(c-d)^2f\sqrt{a-a\ldots}}$$

Mathematica [C] time = 36.13, size = 473385, normalized size = 1137.94

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^2),x]
```

```
[Out] Result too large to show
```

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/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas"
)
```

```
[Out] Timed out
```

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(1/(c+d*sec(f*x+e))^2/(a+a*sec(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)
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
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2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
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t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
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o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
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sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableUnab
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le to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
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tinuities at zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to che
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ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/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)Warning, integration of abs
 or sign assumes constant sign by intervals (correct if the argument is rea
l):Check [abs(t_nostep^2-1)]Evaluation time: 1.13index.cc index_m i_lex_is_
greater Error: Bad Argument Value
```

maple [B] time = 5.17, size = 117715, normalized size = 282.97

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] result too large to display
```

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

$$\int \frac{1}{\sqrt{a \sec\left(fx+e\right)+a}\left(d \sec\left(fx+e\right)+c\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(1/(sqrt(a*sec(f*x + e) + a)*(d*sec(f*x + e) + c)^2), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^2),x)
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^2), x)
```

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

$$\int \frac{1}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}\left(c+d\sec\left(e+fx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))**2/(a+a*sec(f*x+e))**(1/2),x)
[Out] Integral(1/(sqrt(a*(sec(e + f*x) + 1))*(c + d*sec(e + f*x))**2), x)
```

3.171 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=653

$$\frac{2\sqrt{a}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{c^3f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{\sqrt{a}\,d^{3/2}(2c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{c^2f(c-d)^2(c+d)^{3/2}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{}{c^2f(c-}$$

```
[Out] 1/2*d^2*tan(f*x+e)/c/(c^2-d^2)/f/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)+
3/4*d^2*tan(f*x+e)/c/(c-d)/(c+d)^2/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2
)+(2*c-d)*d^2*tan(f*x+e)/c^2/(c-d)^2/(c+d)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+
e))^(1/2)+2*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*a^(1/2)*tan(f*x+e)/c^3/
f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+3/4*d^(3/2)*arctanh(d^(1/2)
*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*a^(1/2)*tan(f*x+e)/c/(c-d)/(c+
d)^(5/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+(2*c-d)*d^(3/2)*ar
ctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*a^(1/2)*tan(f*x+e
)/c^2/(c-d)^2/(c+d)^(3/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-a
rctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*2^(1/2)*a^(1/2)*tan(f*x+
e)/(c-d)^3/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+2*d^(3/2)*(3*c^2
-3*c*d+d^2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*a^(
1/2)*tan(f*x+e)/c^3/(c-d)^3/f/(c+d)^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f
*x+e))^(1/2)
```

Rubi [A] time = 0.65, antiderivative size = 653, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {3940, 180, 63, 206, 51, 208}

$$\frac{d^2(2c-d)\tan(e+fx)}{c^2f(c-d)^2(c+d)\sqrt{a\sec(e+fx)+a}\,(c+d\sec(e+fx))}+\frac{d^2\tan(e+fx)}{2cf\left(c^2-d^2\right)\sqrt{a\sec(e+fx)+a}\,(c+d\sec(e+fx))^2}+$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^3),x]
```

```
[Out] (2*Sqrt[a]*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(c^3*f*S
qrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*Sqrt[a]*ArcTan
h[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/((c - d)^3*f*Sq
rt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (3*Sqrt[a]*d^(3/2)*ArcTa
nh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/
(4*c*(c - d)*(c + d)^(5/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*
x]]) + (Sqrt[a]*(2*c - d)*d^(3/2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]]
)/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(c^2*(c - d)^2*(c + d)^(3/2)*f*Sqrt[
a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (2*Sqrt[a]*d^(3/2)*(3*c^2 -
 3*c*d + d^2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c +
d])]*Tan[e + f*x])/(c^3*(c - d)^3*Sqrt[c + d]*f*Sqrt[a - a*Sec[e + f*x]]*Sq
rt[a + a*Sec[e + f*x]]) + (d^2*Tan[e + f*x])/(2*c*(c^2 - d^2)*f*Sqrt[a + a*
Sec[e + f*x]]*(c + d*Sec[e + f*x])^2) + (3*d^2*Tan[e + f*x])/(4*c*(c - d)*(
c + d)^2*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])) + ((2*c - d)*d^2*
Tan[e + f*x])/(c^2*(c - d)^2*(c + d)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[
e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
```

```
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^3}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)(c+dx)^3}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{1}{ac^3x\sqrt{a-ax}} - \frac{1}{a(c-d)^3(1+x)\sqrt{a-ax}} + \frac{}{ac(c-}\right.\right.}{f\sqrt{a-a\sec(}}$$

$$= -\frac{(a\tan(e+fx))\,\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{(a\tan(e}{(c-d}$$

$$= \frac{d^2\tan(e+fx)}{2c\left(c^2-d^2\right)f\sqrt{a+a\sec(e+fx)}\,(c+d\sec(e+fx))^2} + \frac{}{c^2(c-d)}$$

$$= \frac{2\sqrt{a}\,\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{\sqrt{2}\,\sqrt{a}\,\tanh^{-1}\left(\right.}{(c-d)^3f\sqrt{a-a\sec}}$$

$$= \frac{2\sqrt{a}\,\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{\sqrt{2}\,\sqrt{a}\,\tanh^{-1}\left(\right.}{(c-d)^3f\sqrt{a-a\sec}}$$

$$= \frac{2\sqrt{a}\,\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+fx)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} - \frac{\sqrt{2}\,\sqrt{a}\,\tanh^{-1}\left(\right.}{(c-d)^3f\sqrt{a-a\sec}}$$

Mathematica [C] time = 38.99, size = 654358, normalized size = 1002.08

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^3),x]
[Out] Result too large to show
```

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/(c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="fricas"
)
[Out] Timed out
```

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(1/(c+d*sec(f*x+e))^3/(a+a*sec(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)
```

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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check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
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(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
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tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
 variableUnable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable t
o check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*
pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-
4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)U
nable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check si
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p/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nos
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ble to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sig
n assumes constant sign by intervals (correct if the argument is real):Chec
k [abs(t_nostep^2-1)]Evaluation time: 1.32index.cc index_m i_lex_is_greater
 Error: Bad Argument Value
```

maple [B] time = 24.79, size = 402966, normalized size = 617.10

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] result too large to display
```

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(1/(c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxima"
)
```

```
[Out] Timed out
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^3),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^3), x)
```

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

$$\int \frac{1}{\sqrt{a \left(\sec{\left(e + f x \right)} + 1\right)} \left(c + d \sec{\left(e + f x \right)}\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))**3/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a*(sec(e + f*x) + 1))*(c + d*sec(e + f*x))**3), x)
```

3.172 $\int \frac{(c+d\sec(e+fx))^3}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=324

$$\frac{2c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{\sqrt{a}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{(c-d)^3\tan(e+fx)}{2af(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}}-\frac{(c-d)^3\tan(e+fx)\,\mathrm{ta}}{2\sqrt{2}\sqrt{a}f\sqrt{a-a\sec(e+}}$$

```
[Out] 2*d^3*tan(f*x+e)/a/f/(a+a*sec(f*x+e))^(1/2)-1/2*(c-d)^3*tan(f*x+e)/a/f/(1+s
ec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*c^3*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1
/2))*tan(f*x+e)/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-1/4
*(c-d)^3*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*tan(f*x+e)/f*2
^(1/2)/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-(c-d)^2*(c+2*d
)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*2^(1/2)*tan(f*x+e)/f/
a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3940, 180, 63, 206, 51}

$$\frac{2c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{\sqrt{a}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{(c-d)^3\tan(e+fx)}{2af(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}}-\frac{(c-d)^3\tan(e+fx)\,\mathrm{ta}}{2\sqrt{2}\sqrt{a}f\sqrt{a-a\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*d^3*Tan[e + f*x])/(a*f*Sqrt[a + a*Sec[e + f*x]]) - ((c - d)^3*Tan[e + f*
x])/(2*a*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]) + (2*c^3*ArcTanh[Sq
rt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(Sqrt[a]*f*Sqrt[a - a*Sec[e +
 f*x]]*Sqrt[a + a*Sec[e + f*x]]) - ((c - d)^3*ArcTanh[Sqrt[a - a*Sec[e + f*
x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(2*Sqrt[2]*Sqrt[a]*f*Sqrt[a - a*Sec[e
+ f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c - d)^2*(c + 2*d)*ArcTanh[Sq
rt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(Sqrt[a]*f*Sqrt[a -
 a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
```

```
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^3}{(a+a\sec(e+fx))^{3/2}}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(c+dx)^3}{x\sqrt{a-ax}\,(a+ax)^2}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{d^3}{a^2\sqrt{a-ax}}+\frac{c^3}{a^2x\sqrt{a-ax}}-\frac{(c-d)^3}{a^2(1+x)^2\sqrt{a-ax}}-\frac{(c-d)^2(c+2d)}{a^2(1+x)\sqrt{a-ax}}\right)\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= \frac{2d^3\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} - \frac{\left(c^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} +$$

$$= \frac{2d^3\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} - \frac{(c-d)^3\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{\left(2c^3\tan(e\right.}{a}$$

$$= \frac{2d^3\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} - \frac{(c-d)^3\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2c^3\tanh}{\sqrt{a}\,f\sqrt{a-}}$$

$$= \frac{2d^3\tan(e+fx)}{af\sqrt{a+a\sec(e+fx)}} - \frac{(c-d)^3\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2c^3\tanh}{\sqrt{a}\,f\sqrt{a-}}$$

Mathematica [C] time = 6.57, size = 856, normalized size = 2.64

$$\frac{2\cos^3\left(\frac{1}{2}(e+fx)\right)(c+d\sec(e+fx))^3\sqrt{\frac{1}{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}}\,\sqrt{1-2\sin^2\left(\frac{1}{2}(e+fx)\right)}\left(-\frac{2\left(2\sqrt{2}\sin^{-1}\left(\sqrt{2}\sin\left(\frac{1}{2}(e+fx)\right)\right)\text{si}\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*Cos[(e + f*x)/2]^3*(c + d*Sec[e + f*x])^3*Sqrt[(1 - 2*Sin[(e + f*x)/2]^2
)^(-1)]*Sqrt[1 - 2*Sin[(e + f*x)/2]^2]*((-3*(c - d)^3*ArcTan[(1 - 2*Sin[(e
+ f*x)/2])/Sqrt[1 - 2*Sin[(e + f*x)/2]^2]])/2 + (3*(c - d)^3*ArcTan[(1 + 2*
Sin[(e + f*x)/2])/Sqrt[1 - 2*Sin[(e + f*x)/2]^2]])/2 - (4*c^2*(c - 3*d)*Sin
[(e + f*x)/2])/Sqrt[1 - 2*Sin[(e + f*x)/2]^2] + ((c - d)^3*(1 - 2*Sin[(e +
f*x)/2]))/(4*(1 + Sin[(e + f*x)/2])*Sqrt[1 - 2*Sin[(e + f*x)/2]^2]) - ((c -
 d)^3*(1 + 2*Sin[(e + f*x)/2]))/(4*(1 - Sin[(e + f*x)/2])*Sqrt[1 - 2*Sin[(e
 + f*x)/2]^2]) - ((c - d)^3*Sqrt[1 - 2*Sin[(e + f*x)/2]^2])/(1 - Sin[(e + f
*x)/2]) + ((c - d)^3*Sqrt[1 - 2*Sin[(e + f*x)/2]^2])/(1 + Sin[(e + f*x)/2])
 - (2*c^3*(-(Sqrt[2]*ArcSin[Sqrt[2]*Sin[(e + f*x)/2]]) + 2*Sqrt[2]*ArcSin[S
qrt[2]*Sin[(e + f*x)/2]]*Sin[(e + f*x)/2]^2 + 2*Sin[(e + f*x)/2]*Sqrt[1 - 2
*Sin[(e + f*x)/2]^2]))/(1 - 2*Sin[(e + f*x)/2]^2) - ((c - d)^2*(11*c + d)*S
in[(e + f*x)/2]*((2*Cos[(e + f*x)/2]^2*Hypergeometric2F1[2, 5/2, 7/2, -(Sin
[(e + f*x)/2]^2/(1 - 2*Sin[(e + f*x)/2]^2))]*Sin[(e + f*x)/2]^2)/(1 - 2*Sin
[(e + f*x)/2]^2) + 5*Csc[(e + f*x)/2]^4*Sqrt[-(Sin[(e + f*x)/2]^2/(1 - 2*Si
n[(e + f*x)/2]^2))]*(1 - 2*Sin[(e + f*x)/2]^2)^2*(3 - 2*Sin[(e + f*x)/2]^2)
*(-ArcTanh[Sqrt[-(Sin[(e + f*x)/2]^2/(1 - 2*Sin[(e + f*x)/2]^2))]] + Sqrt[-
(Sin[(e + f*x)/2]^2/(1 - 2*Sin[(e + f*x)/2]^2))])))/(10*(1 - 2*Sin[(e + f*x
)/2]^2)^(3/2))))/(f*(d + c*Cos[e + f*x])^3*Sec[e + f*x]^(3/2)*(a*(1 + Sec[e
 + f*x]))^(3/2))
```

fricas [A] time = 34.52, size = 701, normalized size = 2.16

$$\left[-\frac{\sqrt{2}\left(5\,c^3-3\,c^2d-9\,cd^2+7\,d^3+\left(5\,c^3-3\,c^2d-9\,cd^2+7\,d^3\right)\cos\left(fx+e\right)^2+2\left(5\,c^3-3\,c^2d-9\,cd^2+7\,d^3\right)\cos\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(sqrt(2)*(5*c^3 - 3*c^2*d - 9*c*d^2 + 7*d^3 + (5*c^3 - 3*c^2*d - 9*c*
d^2 + 7*d^3)*cos(f*x + e)^2 + 2*(5*c^3 - 3*c^2*d - 9*c*d^2 + 7*d^3)*cos(f*x
 + e))*sqrt(-a)*log(-(2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x
+ e))*cos(f*x + e)*sin(f*x + e) - 3*a*cos(f*x + e)^2 - 2*a*cos(f*x + e) + a
)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 8*(c^3*cos(f*x + e)^2 + 2*c^3*co
s(f*x + e) + c^3)*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a
)/(cos(f*x + e) + 1)) - 4*(4*d^3 - (c^3 - 3*c^2*d + 3*c*d^2 - 5*d^3)*cos(f*
x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^2*f*cos(f*
x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f), 1/4*(sqrt(2)*(5*c^3 - 3*c^2*d - 9
*c*d^2 + 7*d^3 + (5*c^3 - 3*c^2*d - 9*c*d^2 + 7*d^3)*cos(f*x + e)^2 + 2*(5*
c^3 - 3*c^2*d - 9*c*d^2 + 7*d^3)*cos(f*x + e))*sqrt(a)*arctan(sqrt(2)*sqrt(
(a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 8
*(c^3*cos(f*x + e)^2 + 2*c^3*cos(f*x + e) + c^3)*sqrt(a)*arctan(sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + 2*(4*d^
3 - (c^3 - 3*c^2*d + 3*c*d^2 - 5*d^3)*cos(f*x + e))*sqrt((a*cos(f*x + e) +
a)/cos(f*x + e))*sin(f*x + e))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e)
 + a^2*f)]
```

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((c+d*sec(f*x+e))^3/(a+a*sec(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)
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: (
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t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
 (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2
)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant si
gn by intervals (correct if the argument is real):Check [abs(cos(f*t_nostep
+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
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)>(-4*pi/t_nostep/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) wer
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(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)Warning, integration of abs or sign assu
mes constant sign by intervals (correct if the argument is real):Check [abs
(t_nostep^2-1)]Evaluation time: 1.8index.cc index_m i_lex_is_greater Error:
 Bad Argument Value
```

maple [B] time = 1.88, size = 957, normalized size = 2.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))*(4*2^(1/2)*cos(f*
x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*sin(f*x+e)*c^3+4*2^(1/2)*(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^3*sin(f*x+e)+5*cos(f*x+e)*(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin
(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*c^3-3*cos(f*x+e)*(-2*cos(f*x+e
)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+
e)+cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*c^2*d-9*cos(f*x+e)*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+
cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*c*d^2+7*cos(f*x+e)*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos
(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*d^3+5*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f
*x+e))*c^3*sin(f*x+e)-3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^2*d*sin
(f*x+e)-9*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(
f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d^2*sin(f*x+e)+7*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*d^3*sin(f*x+e)-2*cos(f*x+e)^2*c^3+6*c
os(f*x+e)^2*c^2*d-6*cos(f*x+e)^2*c*d^2+10*cos(f*x+e)^2*d^3+2*c^3*cos(f*x+e)
```

```
-6*cos(f*x+e)*c^2*d+6*cos(f*x+e)*c*d^2-2*cos(f*x+e)*d^3-8*d^3)/sin(f*x+e)^3
/a^2
```

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((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^3}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^3/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c + d/cos(e + f*x))^3/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\left(c+d\sec\left(e+fx\right)\right)^3}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**3/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral((c + d*sec(e + f*x))**3/(a*(sec(e + f*x) + 1))**(3/2), x)
```

3.173 $\int \frac{(c+d\sec(e+fx))^2}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=290

$$-\frac{\sqrt{2}\left(c^2-d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{a}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{\sqrt{a}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{(c}{2af(\sec(e+}$$

```
[Out] -1/2*(c-d)^2*tan(f*x+e)/a/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*c^2*arc
tanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/f/a^(1/2)/(a-a*sec(f*x+e))^
(1/2)/(a+a*sec(f*x+e))^(1/2)-1/4*(c-d)^2*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)
*2^(1/2)/a^(1/2))*tan(f*x+e)/f*2^(1/2)/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*
sec(f*x+e))^(1/2)-(c^2-d^2)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1
/2))*2^(1/2)*tan(f*x+e)/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(
1/2)
```

Rubi [A] time = 0.22, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3940, 180, 63, 206, 51}

$$-\frac{\sqrt{2}\left(c^2-d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{\sqrt{a}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{\sqrt{a}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{(c}{2af(\sec(e+}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] -((c - d)^2*Tan[e + f*x])/(2*a*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]
]) + (2*c^2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(Sqrt[a
]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - ((c - d)^2*ArcTanh
[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(2*Sqrt[2]*Sqrt[
a]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c^2 - d
^2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(Sqrt
[a]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^2}{(a+a\sec(e+fx))^{3/2}}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(c+dx)^2}{x\sqrt{a-ax}\,(a+ax)^2}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{c^2}{a^2x\sqrt{a-ax}} - \frac{(c-d)^2}{a^2(1+x)^2\sqrt{a-ax}} + \frac{-c^2+d^2}{a^2(1+x)\sqrt{a-ax}}\right)dx, x, \sec(e+\ldots}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(c^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{\left((c-d)^2\tan(e+fx)\right)\text{Sub}\ldots}{f\sqrt{a-a\sec(e\ldots}}$$

$$= -\frac{(c-d)^2\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{\left(2c^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{1-\frac{x^2}{a}}\,dx, x\ldots\right.}{af\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\ldots}}$$

$$= -\frac{(c-d)^2\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2c^2\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+\ldots}{\sqrt{a}\,f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e\ldots}}$$

$$= -\frac{(c-d)^2\tan(e+fx)}{2af(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2c^2\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)\tan(e+\ldots}{\sqrt{a}\,f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e\ldots}}$$

Mathematica [C] time = 27.75, size = 16153, normalized size = 55.70

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] Result too large to show
```

fricas [A] time = 12.90, size = 620, normalized size = 2.14

$$\left[-\frac{4\left(c^2-2\,cd+d^2\right)\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)-\sqrt{2}\left(\left(5\,c^2-2\,cd-3\,d^2\right)\cos\left(fx+e\right)^2+5\,c^2-2\,cd\ldots\right.}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(4*(c^2 - 2*c*d + d^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*
x + e)*sin(f*x + e) - sqrt(2)*((5*c^2 - 2*c*d - 3*d^2)*cos(f*x + e)^2 + 5*c
^2 - 2*c*d - 3*d^2 + 2*(5*c^2 - 2*c*d - 3*d^2)*cos(f*x + e))*sqrt(-a)*log((
2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin
(f*x + e) + 3*a*cos(f*x + e)^2 + 2*a*cos(f*x + e) - a)/(cos(f*x + e)^2 + 2*
cos(f*x + e) + 1)) + 8*(c^2*cos(f*x + e)^2 + 2*c^2*cos(f*x + e) + c^2)*sqrt
(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x
 + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)))
/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f), -1/4*(2*(c^2 - 2*c*
d + d^2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e)
- sqrt(2)*((5*c^2 - 2*c*d - 3*d^2)*cos(f*x + e)^2 + 5*c^2 - 2*c*d - 3*d^2 +
 2*(5*c^2 - 2*c*d - 3*d^2)*cos(f*x + e))*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) + 8*(c^2*
cos(f*x + e)^2 + 2*c^2*cos(f*x + e) + c^2)*sqrt(a)*arctan(sqrt((a*cos(f*x +
 e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))))/(a^2*f*cos(f*x
 + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f)]
```

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((c+d*sec(f*x+e))^2/(a+a*sec(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)
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: (
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check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
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ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
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sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint:
 run assume to make assumptions on a variableWarning, assuming -2*a+a is po
```

```
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
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tep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to c
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/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to chec
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ostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t
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tep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_n
ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
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step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
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 check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/
x/2)Warning, integration of abs or sign assumes constant sign by intervals
(correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time:
 1.42index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.55, size = 756, normalized size = 2.61

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-4\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)\sqrt{2}\,\sin\left(fx+e\right)c^{2}\cos\left(fx+e\right)-5\sqrt{-\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-4*(-2*cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x
+e)*2^(1/2))*2^(1/2)*sin(f*x+e)*c^2*cos(f*x+e)-5*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)
-1)/sin(f*x+e))*sin(f*x+e)*c^2*cos(f*x+e)+2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^
(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/s
in(f*x+e))*sin(f*x+e)*c*d*cos(f*x+e)+3*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*
x+e))*sin(f*x+e)*d^2*cos(f*x+e)-4*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arct
anh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))
*2^(1/2)*c^2*sin(f*x+e)-5*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^2*sin
(f*x+e)+2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(
f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d*sin(f*x+e)+3*(-2*co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*s
in(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*d^2*sin(f*x+e)+2*cos(f*x+e)^2*c^2-4*cos
(f*x+e)^2*c*d+2*cos(f*x+e)^2*d^2-2*cos(f*x+e)*c^2+4*cos(f*x+e)*c*d-2*cos(f*
x+e)*d^2)/(1+cos(f*x+e))/sin(f*x+e)/a^2
```

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

$$\int \frac{\left(d \sec\left(fx+e\right)+c\right)^{2}}{\left(a \sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e) + c)^2/(a*sec(f*x + e) + a)^(3/2), x)
```

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

$$\int \frac{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^2}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^2/(a + a/cos(e + f*x))^(3/2),x)
```

```
[Out] int((c + d/cos(e + f*x))^2/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\left(c+d \sec\left(e+fx\right)\right)^{2}}{\left(a \left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**2/(a+a*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral((c + d*sec(e + f*x))**2/(a*(sec(e + f*x) + 1))**(3/2), x)
```

3.174 $\int \frac{c+d\sec(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=127

$$-\frac{(5c-d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{2\sqrt{2}a^{3/2}f}+\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{(c-d)\tan(e+fx)}{2f(a\sec(e+fx)+a)^{3/2}}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/f-1/4*(5*c-d)
*arctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(3/2)/f*2^
(1/2)-1/2*(c-d)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.18, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {3922, 3920, 3774, 203, 3795}

$$-\frac{(5c-d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{2\sqrt{2}a^{3/2}f}+\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{3/2}f}-\frac{(c-d)\tan(e+fx)}{2f(a\sec(e+fx)+a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])/(a + a*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(3/2)*f) -
 ((5*c - d)*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]]
)])/(2*Sqrt[2]*a^(3/2)*f) - ((c - d)*Tan[e + f*x])/(2*f*(a + a*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 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3795

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Dist[-2/f, Subst[Int[1/(2*a + x^2), x], x, (b*Cot[e + f*x])/Sqrt[
a + b*Csc[e + f*x]]], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3920

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c/a, Int[Sqrt[a + b*Csc[e + f*x]], x], x] - D
ist[(b*c - a*d)/a, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
```

```
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{c+d\sec(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx = -\frac{(c-d)\tan(e+fx)}{2f(a+a\sec(e+fx))^{3/2}} - \frac{\int \frac{-2ac+\frac{1}{2}a(c-d)\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,dx}{2a^2}$$

$$= -\frac{(c-d)\tan(e+fx)}{2f(a+a\sec(e+fx))^{3/2}} + \frac{c\int\sqrt{a+a\sec(e+fx)}\,dx}{a^2} - \frac{(5c-d)\int\frac{\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}}\,d}{4a}$$

$$= -\frac{(c-d)\tan(e+fx)}{2f(a+a\sec(e+fx))^{3/2}} - \frac{(2c)\,\mathrm{Subst}\left(\int\frac{1}{a+x^2}\,dx, x, -\frac{a\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{af} + \frac{(5c-d)\,\mathrm{Su}}{}$$

$$= \frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{3/2}f} - \frac{(5c-d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{2\sqrt{2}\,a^{3/2}f} - \frac{(c-d)\tan(e+f}{2f(a+a\sec(e+fx}$$

Mathematica [C] time = 26.70, size = 10105, normalized size = 79.57

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])/(a + a*Sec[e + f*x])^(3/2),x]
[Out] Result too large to show
```

fricas [B] time = 3.18, size = 548, normalized size = 4.31

$$\left[-\frac{4\,(c-d)\sqrt{\frac{a\cos\left(fx+e\right)+a}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\sin\left(fx+e\right)-\sqrt{2}\left((5\,c-d)\cos\left(fx+e\right)^2+2\,(5\,c-d)\cos\left(fx+e\right)+5\,c-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(3/2),x, algorithm="fricas")
[Out] [-1/8*(4*(c - d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f
*x + e) - sqrt(2)*((5*c - d)*cos(f*x + e)^2 + 2*(5*c - d)*cos(f*x + e) + 5*
c - d)*sqrt(-a)*log((2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
 e))*cos(f*x + e)*sin(f*x + e) + 3*a*cos(f*x + e)^2 + 2*a*cos(f*x + e) - a)
/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 8*(c*cos(f*x + e)^2 + 2*c*cos(f*x
 + e) + c)*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x +
e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(
f*x + e) + 1)))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f), -1/4
*(2*(c - d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x +
e) - sqrt(2)*((5*c - d)*cos(f*x + e)^2 + 2*(5*c - d)*cos(f*x + e) + 5*c - d
)*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x +
e)/(sqrt(a)*sin(f*x + e))) + 8*(c*cos(f*x + e)^2 + 2*c*cos(f*x + e) + c)*sq
```

```
rt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*
sin(f*x + e))))/(a^2*f*cos(f*x + e)^2 + 2*a^2*f*cos(f*x + e) + a^2*f)]
```

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((c+d*sec(f*x+e))/(a+a*sec(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)
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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t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
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o make assumptions on a variableWarning, assuming -2*a+a is positive. Hint:
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 -2*a+a is positive. Hint: run assume to make assumptions on a variableUnab
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t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Discon
tinuities at zeroes of cos(f*t_nostep+exp(1)) were not checkedUnable to che
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able to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>
(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign by int
ervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluatio
n time: 1.21index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.38, size = 552, normalized size = 4.35

$$\frac{\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\left(-4\sqrt{2}\,\sin\left(fx+e\right)\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\operatorname{arctanh}\left(\frac{\sqrt{-\frac{2\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sin\left(fx+e\right)\sqrt{2}}{2\cos\left(fx+e\right)}\right)c\cos\left(fx+e\right)-5\sin\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(3/2),x)
```

```
[Out] 1/4/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-4*2^(1/2)*sin(f*x+e)*(-2*cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c*cos(f*x+e)-5*sin(f*x+e)*(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+c
os(f*x+e)-1)/sin(f*x+e))*c*cos(f*x+e)+sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)
-1)/sin(f*x+e))*d*cos(f*x+e)-4*2^(1/2)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos
(f*x+e)*2^(1/2))*c-5*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c
+sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+co
s(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*d+2*cos(f*x+e)^2*c-2*
cos(f*x+e)^2*d-2*c*cos(f*x+e)+2*d*cos(f*x+e))/(1+cos(f*x+e))/sin(f*x+e)/a^2
```

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

$$\int \frac{d\sec\left(fx+e\right)+c}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e) + c)/(a*sec(f*x + e) + a)^(3/2), x)
```

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

$$\int \frac{c+\frac{d}{\cos\left(e+f\,x\right)}}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))/(a + a/cos(e + f*x))^(3/2),x)
[Out] int((c + d/cos(e + f*x))/(a + a/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{c+d\sec\left(e+fx\right)}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))**(3/2),x)
[Out] Integral((c + d*sec(e + f*x))/(a*(sec(e + f*x) + 1))**(3/2), x)
```

3.175 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))}\,dx$

Optimal. Leaf size=394

$$-\frac{2d^{5/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{\sqrt{a}\,cf(c-d)^2\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{\tan(e+fx)}{2af(c-d)(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}}$$

```
[Out] -1/2*tan(f*x+e)/a/(c-d)/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*arctanh((
a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2
)/(a+a*sec(f*x+e))^(1/2)-1/4*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(
1/2))*tan(f*x+e)/(c-d)/f*2^(1/2)/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*
x+e))^(1/2)-(c-2*d)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*2^(
1/2)*tan(f*x+e)/(c-d)^2/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(
1/2)-2*d^(5/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*
tan(f*x+e)/c/(c-d)^2/f/a^(1/2)/(c+d)^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(
f*x+e))^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 394, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 180, 63, 206, 51, 208}

$$-\frac{2d^{5/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{\sqrt{a}\,cf(c-d)^2\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{\tan(e+fx)}{2af(c-d)(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])),x]
```

```
[Out] -Tan[e + f*x]/(2*a*(c - d)*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]]) +
 (2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(Sqrt[a]*c*f*Sq
rt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c - 2*d)*ArcTa
nh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(Sqrt[a]*(c -
d)^2*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (ArcTanh[Sqrt[a
 - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(2*Sqrt[2]*Sqrt[a]*(c -
 d)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (2*d^(5/2)*ArcTa
nh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/
(Sqrt[a]*c*(c - d)^2*Sqrt[c + d]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[
e + f*x]])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)^2(c+dx)}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{1}{a^2cx\sqrt{a-ax}} - \frac{1}{a^2(c-d)(1+x)^2\sqrt{a-ax}} + \frac{}{a^2(c}\right.\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a}}$$

$$= -\frac{\tan(e+fx)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{cf\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{((c-2d)\,\text{ta}}{(c-}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{(2\tan(e+f}{acf\sqrt{}}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2\tanh^{-}}{\sqrt{a}\,cf\sqrt{a-}}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2\tanh^{-}}{\sqrt{a}\,cf\sqrt{a-}}$$

Mathematica [C] time = 35.21, size = 378865, normalized size = 961.59

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])),x]
```

[Out] Result too large to show

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/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] Timed out
```

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(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),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
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step/2)Warning, integration of abs or sign assumes constant sign by interva
ls (correct if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
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p/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)Warning, integ
ration of abs or sign assumes constant sign by intervals (correct if the ar
gument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.41index.cc inde
x_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.78, size = 2076, normalized size = 5.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] 1/4/f*(-1+cos(f*x+e))*(4*2^(1/2)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(
f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/
cos(f*x+e)*2^(1/2))*sin(f*x+e)*cos(f*x+e)*(d/(c-d))^(1/2)*c^2-8*2^(1/2)*((c
+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*sin(f*x+e)*cos(f
*x+e)*(d/(c-d))^(1/2)*c*d+4*2^(1/2)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+
e)/cos(f*x+e)*2^(1/2))*sin(f*x+e)*cos(f*x+e)*(d/(c-d))^(1/2)*d^2+4*2^(1/2)*
((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*sin(f*x+e)*(d
/(c-d))^(1/2)*c^2-8*2^(1/2)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f
*x+e)*2^(1/2))*sin(f*x+e)*(d/(c-d))^(1/2)*c*d+4*2^(1/2)*((c+d)*(c-d))^(1/2)
*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*sin(f*x+e)*(d/(c-d))^(1/2)*d^2-2
*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(2*((d/(c-d))^(1/2)*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)*cos(f
*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*s
in(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))*sin(f*x+e)*cos(f*x+e)*d^3+2*2^(1/
```

```
2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-2*((d/(c-d))^(1/2)*(-2*cos(f*x+
e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+
d)*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*
x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d))*sin(f*x+e)*cos(f*x+e)*d^3+5*((c+d)*(c-
d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(
f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*cos(f*x+e)*(
d/(c-d))^(1/2)*c^2-9*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(
f*x+e))*sin(f*x+e)*cos(f*x+e)*(d/(c-d))^(1/2)*c*d-2*2^(1/2)*(-2*cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)*ln(2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^
(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(1/2)*cos(f*x+e)-c*sin(f*x+e)+d*sin
(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d
*cos(f*x+e)+c-d))*sin(f*x+e)*d^3+2*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*ln(-2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*
sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*s
in(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(
c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d)
)*sin(f*x+e)*d^3+5*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*
x+e))*sin(f*x+e)*(d/(c-d))^(1/2)*c^2-9*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+
cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*(d/(c-d))^(1/2)*c*d-2*((c+d)*(c-d))^(1
/2)*cos(f*x+e)^2*(d/(c-d))^(1/2)*c^2+2*((c+d)*(c-d))^(1/2)*cos(f*x+e)^2*(d/
(c-d))^(1/2)*c*d+2*((c+d)*(c-d))^(1/2)*cos(f*x+e)*(d/(c-d))^(1/2)*c^2-2*((c
+d)*(c-d))^(1/2)*cos(f*x+e)*(d/(c-d))^(1/2)*c*d)*(a*(1+cos(f*x+e))/cos(f*x+
e))^(1/2)/sin(f*x+e)^3/(d/(c-d))^(1/2)/(c-d)^2/c/((c+d)*(c-d))^(1/2)/a^2
```

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

$$\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(d\sec\left(fx+e\right)+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="maxima")
[Out] integrate(1/((a*sec(f*x + e) + a)^(3/2)*(d*sec(f*x + e) + c)), x)
```

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

$$\int \frac{1}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{3/2}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))),x)
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))), x)
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\left(c+d\sec\left(e+fx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e)),x)
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(3/2)*(c + d*sec(e + f*x))), x)
```

3.176 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=560

$$-\frac{2d^{5/2}(3c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{\sqrt{a}\,c^2f(c-d)^3\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{\sqrt{a}\,c^2f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}$$

```
[Out] -1/2*tan(f*x+e)/a/(c-d)^2/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)-d^3*tan(f
*x+e)/a/c/(c-d)^2/(c+d)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*arctanh
((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c^2/f/a^(1/2)/(a-a*sec(f*x+e))^
(1/2)/(a+a*sec(f*x+e))^(1/2)-d^(5/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)
/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c/(c-d)^2/(c+d)^(3/2)/f/a^(1/2)/(a-a*sec(f
*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-1/4*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*
2^(1/2)/a^(1/2))*tan(f*x+e)/(c-d)^2/f*2^(1/2)/a^(1/2)/(a-a*sec(f*x+e))^(1/2
)/(a+a*sec(f*x+e))^(1/2)-(c-3*d)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)
/a^(1/2))*2^(1/2)*tan(f*x+e)/(c-d)^3/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*
sec(f*x+e))^(1/2)-2*(3*c-d)*d^(5/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/
a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c^2/(c-d)^3/f/a^(1/2)/(c+d)^(1/2)/(a-a*sec(
f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.51, antiderivative size = 560, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {3940, 180, 63, 206, 51, 208}

$$-\frac{2d^{5/2}(3c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{\sqrt{a}\,c^2f(c-d)^3\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{\sqrt{a}\,c^2f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^2),x]
```

```
[Out] -Tan[e + f*x]/(2*a*(c - d)^2*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]])
 + (2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(Sqrt[a]*c^2*
f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c - 3*d)*A
rcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(Sqrt[a]*(
c - d)^3*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (ArcTanh[Sq
rt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(2*Sqrt[2]*Sqrt[a]*
(c - d)^2*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (d^(5/2)*A
rcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*
x])/(Sqrt[a]*c*(c - d)^2*(c + d)^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a +
a*Sec[e + f*x]]) - (2*(3*c - d)*d^(5/2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e +
 f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(Sqrt[a]*c^2*(c - d)^3*Sqrt[c
+ d]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (d^3*Tan[e + f*
x])/(a*c*(c - d)^2*(c + d)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
```

```
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^2}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)^2(c+dx)^2}\,dx, x, \sec(e+f$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{1}{a^2c^2x\sqrt{a-ax}} - \frac{1}{a^2(c-d)^2(1+x)^2\sqrt{a-ax}} + \right.\right.}{f\sqrt{a-a\,\text{se}}}$$

$$= -\frac{\tan(e+fx)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{c^2f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}} + \frac{((c-3d)\,\text{ta}}{(c-}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)^2f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} - \frac{}{ac(c-d)^2(}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)^2f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2\tan}{\sqrt{a}\,c^2f\sqrt{a}}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)^2f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2\tan}{\sqrt{a}\,c^2f\sqrt{a}}$$

Mathematica [C] time = 38.10, size = 582620, normalized size = 1040.39

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^2),x]
```

```
[Out] Result too large to show
```

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/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^2,x, algorithm="fricas"
)
```

```
[Out] Timed out
```

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(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^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
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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_no
step/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable t
o check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*
pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assume
s constant sign by intervals (correct if the argument is real):Check [abs(c
os(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nos
tep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to c
heck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/
t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
 (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2
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/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to chec
k sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_n
ostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2
*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming
```

```
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
 variableWarning, assuming -2*a+a is positive. Hint: run assume to make ass
umptions on a variableWarning, assuming -2*a+a is positive. Hint: run assum
e to make assumptions on a variableUnable to check sign: (4*pi/t_nostep/2)>
(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2
)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check
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tep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_n
ostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to
 check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*p
i/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4
*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Un
able to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sig
n: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep
/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nost
ep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to ch
eck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t
_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi
/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unabl
e to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
(4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)
>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/
2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check
 sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_no
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nable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)
>(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign by in
tervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluati
on time: 1.44index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 5.45, size = 164796, normalized size = 294.28

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^2,x)
```

```
[Out] result too large to display
```

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(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^2,x, algorithm="maxima"
)
```

```
[Out] Timed out
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{3/2}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))^2),x)
[Out] int(1/((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))^2), x)
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\left(c+d\sec\left(e+fx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e))**2,x)
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(3/2)*(c + d*sec(e + f*x))**2), x)
```

3.177 $\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=802

$$-\frac{(3c-d)\tan(e+fx)d^3}{ac^2(c-d)^3(c+d)f\sqrt{\sec(e+fx)a+a}\,(c+d\sec(e+fx))}-\frac{3\tan(e+fx)d^3}{4ac\left(c^2-d^2\right)^2 f\sqrt{\sec(e+fx)a+a}\,(c+d\sec(e+f}$$

```
[Out] -1/2*tan(f*x+e)/a/(c-d)^3/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)-1/2*d^3*t
an(f*x+e)/a/c/(c-d)^2/(c+d)/f/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)-(3*
c-d)*d^3*tan(f*x+e)/a/c^2/(c-d)^3/(c+d)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))
^(1/2)-3/4*d^3*tan(f*x+e)/a/c/(c^2-d^2)^2/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e
))^(1/2)+2*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/c^3/f/a^(1/2)
/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-3/4*d^(5/2)*arctanh(d^(1/2)*
(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c/(c-d)^2/(c+d)^(5/2
)/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-(3*c-d)*d^(5/2)*a
rctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/c^2/(
c-d)^3/(c+d)^(3/2)/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-
1/4*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*tan(f*x+e)/(c-d)^3/
f*2^(1/2)/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-(c-4*d)*arc
tanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*2^(1/2)*tan(f*x+e)/(c-d)^4
/f/a^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-2*d^(5/2)*(6*c^2-4
*c*d+d^2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f
*x+e)/c^3/(c-d)^4/f/a^(1/2)/(c+d)^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x
+e))^(1/2)
```

Rubi [A] time = 0.80, antiderivative size = 802, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {3940, 180, 63, 206, 51, 208}

$$-\frac{(3c-d)\tan(e+fx)d^3}{ac^2(c-d)^3(c+d)f\sqrt{\sec(e+fx)a+a}\,(c+d\sec(e+fx))}-\frac{3\tan(e+fx)d^3}{4ac\left(c^2-d^2\right)^2 f\sqrt{\sec(e+fx)a+a}\,(c+d\sec(e+f}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^3),x]
```

```
[Out] -Tan[e + f*x]/(2*a*(c - d)^3*f*(1 + Sec[e + f*x])*Sqrt[a + a*Sec[e + f*x]])
 + (2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Tan[e + f*x])/(Sqrt[a]*c^3*
f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c - 4*d)*A
rcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(Sqrt[a]*(
c - d)^4*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (ArcTanh[Sq
rt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(2*Sqrt[2]*Sqrt[a]*
(c - d)^3*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (3*d^(5/2)
*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e +
f*x])/(4*Sqrt[a]*c*(c - d)^2*(c + d)^(5/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[
a + a*Sec[e + f*x]]) - ((3*c - d)*d^(5/2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e
 + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(Sqrt[a]*c^2*(c - d)^3*(c +
d)^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (2*d^(5/2)*
(6*c^2 - 4*c*d + d^2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*S
qrt[c + d])]*Tan[e + f*x])/(Sqrt[a]*c^3*(c - d)^4*Sqrt[c + d]*f*Sqrt[a - a*
Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (d^3*Tan[e + f*x])/(2*a*c*(c - d)
^2*(c + d)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^2) - ((3*c - d)*
d^3*Tan[e + f*x])/(a*c^2*(c - d)^3*(c + d)*f*Sqrt[a + a*Sec[e + f*x]]*(c +
d*Sec[e + f*x])) - (3*d^3*Tan[e + f*x])/(4*a*c*(c^2 - d^2)^2*f*Sqrt[a + a*S
ec[e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{3/2}(c+d\sec(e+fx))^3}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)^2(c+dx)^3}\,dx,x,\sec(e+\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{1}{a^2c^3x\sqrt{a-ax}}-\frac{1}{a^2(c-d)^3(1+x)^2\sqrt{a-ax}}\right.\right.}{}$$

$$= -\frac{\tan(e+fx)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{c^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{((c-4a}{(}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)^3f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} - \frac{}{2ac(c-}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)^3f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2\,t}{\sqrt{a}\,c^3f}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)^3f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2\,t}{\sqrt{a}\,c^3f}$$

$$= -\frac{\tan(e+fx)}{2a(c-d)^3f(1+\sec(e+fx))\sqrt{a+a\sec(e+fx)}} + \frac{2\,t}{\sqrt{a}\,c^3f}$$

Mathematica [C] time = 41.23, size = 776222, normalized size = 967.86

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^3),x]
[Out] Result too large to show
```

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/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^3,x, algorithm="fricas"
)
[Out] Timed out
```

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(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^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)
```

```
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
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i/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep^2-1)]Ev
aluation time: 1.92index.cc index_m i_lex_is_greater Error: Bad Argument Va
lue
```

maple [B] time = 31.94, size = 480553, normalized size = 599.19

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^3,x)
```

```
[Out] result too large to display
```

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(1/(a+a*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^3,x, algorithm="maxima"
)
```

```
[Out] Timed out
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x))^3),x)
```

```
[Out] \text{Hanged}
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\left(c+d\sec\left(e+fx\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e))**3,x)
```

```
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(3/2)*(c + d*sec(e + f*x))**3), x)
```

3.178 $\int \frac{(c+d\sec(e+fx))^3}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=480

$$-\frac{\sqrt{2}\left(c^3-d^3\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{a^{3/2}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{a^{3/2}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{3(c-d)^3\tan}{16\sqrt{2}\,a^{3/2}f\sqrt{a-}}$$

```
[Out] -1/4*(c-d)^3*tan(f*x+e)/a^2/f/(1+sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)-3/16*
(c-d)^3*tan(f*x+e)/a^2/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)-1/2*(c-d)^2*
(c+2*d)*tan(f*x+e)/a^2/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*c^3*arctan
h((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/f/(a-a*sec(f*x+e))^(1/
2)/(a+a*sec(f*x+e))^(1/2)-3/32*(c-d)^3*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2
^(1/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*se
c(f*x+e))^(1/2)-1/4*(c-d)^2*(c+2*d)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1
/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f
*x+e))^(1/2)-(c^3-d^3)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*
2^(1/2)*tan(f*x+e)/a^(3/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 480, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3940, 180, 63, 206, 51}

$$-\frac{\sqrt{2}\left(c^3-d^3\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{a^{3/2}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2c^3\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{a^{3/2}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{3(c-}{16a^2f(\sec(e+}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] -((c - d)^3*Tan[e + f*x])/(4*a^2*f*(1 + Sec[e + f*x])^2*Sqrt[a + a*Sec[e +
f*x]]) - (3*(c - d)^3*Tan[e + f*x])/(16*a^2*f*(1 + Sec[e + f*x])*Sqrt[a + a
*Sec[e + f*x]]) - ((c - d)^2*(c + 2*d)*Tan[e + f*x])/(2*a^2*f*(1 + Sec[e +
f*x])*Sqrt[a + a*Sec[e + f*x]]) + (2*c^3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/S
qrt[a]]*Tan[e + f*x])/(a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e
+ f*x]]) - (3*(c - d)^3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]
*Tan[e + f*x])/(16*Sqrt[2]*a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Se
c[e + f*x]]) - ((c - d)^2*(c + 2*d)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[
2]*Sqrt[a])]*Tan[e + f*x])/(2*Sqrt[2]*a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sq
rt[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c^3 - d^3)*ArcTanh[Sqrt[a - a*Sec[e + f
*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*S
qrt[a + a*Sec[e + f*x]])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
```

```
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^3}{(a+a\sec(e+fx))^{5/2}}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{(c+dx)^3}{x\sqrt{a-ax}\,(a+ax)^3}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \left(\frac{c^3}{a^3x\sqrt{a-ax}} - \frac{(c-d)^3}{a^3(1+x)^3\sqrt{a-ax}} - \frac{(c-d)^2(c+2d)}{a^3(1+x)^2\sqrt{a-ax}} + \frac{-c^3+d}{a^3(1+x)\sqrt{\ }}\right.\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(c^3\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{af\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{\left((c-d)^3\tan(e+fx)\right)\text{S}}{af\sqrt{a-a\,\text{se}}}$$

$$= -\frac{(c-d)^3\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{(c-d)^2(c+2d)\tan(e+f}{2a^2f(1+\sec(e+fx))\sqrt{a+a\,\text{sec}}}$$

$$= -\frac{(c-d)^3\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{3(c-d)^3\tan(e+fx)}{16a^2f(1+\sec(e+fx))\sqrt{a+a\,\text{se}}}$$

$$= -\frac{(c-d)^3\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{3(c-d)^3\tan(e+fx)}{16a^2f(1+\sec(e+fx))\sqrt{a+a\,\text{se}}}$$

$$= -\frac{(c-d)^3\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{3(c-d)^3\tan(e+fx)}{16a^2f(1+\sec(e+fx))\sqrt{a+a\,\text{se}}}$$

Mathematica [C] time = 29.39, size = 21194, normalized size = 44.15

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])^3/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] Result too large to show
```

fricas [A] time = 56.61, size = 880, normalized size = 1.83

$$\left[\frac{\sqrt{2}\left(\left(43\,c^3-9\,c^2d-15\,cd^2-19\,d^3\right)\cos\left(fx+e\right)^3+43\,c^3-9\,c^2d-15\,cd^2-19\,d^3+3\left(43\,c^3-9\,c^2d-15\,cd^2-19\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [1/64*(sqrt(2)*((43*c^3 - 9*c^2*d - 15*c*d^2 - 19*d^3)*cos(f*x + e)^3 + 43*
c^3 - 9*c^2*d - 15*c*d^2 - 19*d^3 + 3*(43*c^3 - 9*c^2*d - 15*c*d^2 - 19*d^3
)*cos(f*x + e)^2 + 3*(43*c^3 - 9*c^2*d - 15*c*d^2 - 19*d^3)*cos(f*x + e))*s
qrt(-a)*log((2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos
(f*x + e)*sin(f*x + e) + 3*a*cos(f*x + e)^2 + 2*a*cos(f*x + e) - a)/(cos(f*
x + e)^2 + 2*cos(f*x + e) + 1)) - 64*(c^3*cos(f*x + e)^3 + 3*c^3*cos(f*x +
e)^2 + 3*c^3*cos(f*x + e) + c^3)*sqrt(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(
-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + a*c
os(f*x + e) - a)/(cos(f*x + e) + 1)) - 4*(3*(5*c^3 - 7*c^2*d - c*d^2 + 3*d^
3)*cos(f*x + e)^2 + (11*c^3 - 9*c^2*d - 15*c*d^2 + 13*d^3)*cos(f*x + e))*sq
rt((a*cos(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 +
 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f), 1/32*(sqrt(2)*((43
*c^3 - 9*c^2*d - 15*c*d^2 - 19*d^3)*cos(f*x + e)^3 + 43*c^3 - 9*c^2*d - 15*
c*d^2 - 19*d^3 + 3*(43*c^3 - 9*c^2*d - 15*c*d^2 - 19*d^3)*cos(f*x + e)^2 +
3*(43*c^3 - 9*c^2*d - 15*c*d^2 - 19*d^3)*cos(f*x + e))*sqrt(a)*arctan(sqrt(
2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x +
e))) - 64*(c^3*cos(f*x + e)^3 + 3*c^3*cos(f*x + e)^2 + 3*c^3*cos(f*x + e) +
 c^3)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(
sqrt(a)*sin(f*x + e))) - 2*(3*(5*c^3 - 7*c^2*d - c*d^2 + 3*d^3)*cos(f*x + e
)^2 + (11*c^3 - 9*c^2*d - 15*c*d^2 + 13*d^3)*cos(f*x + e))*sqrt((a*cos(f*x
+ e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f
*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f)]
```

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((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(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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x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check
 sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_no
```

```
step/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable t
o check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*
pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assume
s constant sign by intervals (correct if the argument is real):Check [abs(c
os(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nos
tep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to c
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 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
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pi/t_nostep/2)>(-4*pi/t_nostep/2)Discontinuities at zeroes of cos(f*t_noste
p+exp(1)) were not checkedUnable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
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heck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/
```

```
t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
 (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2
)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep
/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to chec
k sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_n
ostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable
to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4
*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to c
heck sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/
2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x
/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/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 c
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)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)Warning, integration of abs or sign assumes con
stant sign by intervals (correct if the argument is real):Check [abs(t_nost
ep^2-1)]Evaluation time: 2.23index.cc index_m i_lex_is_greater Error: Bad A
rgument Value
```

maple [B] time = 1.90, size = 1444, normalized size = 3.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/32/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e))*(-6*cos(f*x+e)^
3*c*d^2+24*cos(f*x+e)^2*c^2*d-24*cos(f*x+e)^2*c*d^2+30*cos(f*x+e)*c*d^2-64*
2^(1/2)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*sin(f*x+e)*c^3
+18*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*c^2*d+3
0*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*c*d^2-32*
cos(f*x+e)^2*sin(f*x+e)*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctan
h(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c
^3-42*cos(f*x+e)^3*c^2*d-43*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^3*s
in(f*x+e)+19*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*d^3*sin(f*x+e)+9*cos
(f*x+e)^2*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^2*d+15*cos
(f*x+e)^2*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d^2+18*cos
(f*x+e)*c^2*d-43*cos(f*x+e)^2*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(
f*x+e))*c^3+19*cos(f*x+e)^2*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*
x+e))*d^3-32*2^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^3*sin(f*x+
e)-86*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*c^3+3
```

```
8*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*sin(f*x+e)*d^3+9*(-2
*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^2*d*sin(f*x+e)+15*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+
cos(f*x+e)-1)/sin(f*x+e))*c*d^2*sin(f*x+e)+18*cos(f*x+e)^3*d^3+8*cos(f*x+e)
^2*d^3-26*cos(f*x+e)*d^3-8*cos(f*x+e)^2*c^3-22*c^3*cos(f*x+e)+30*cos(f*x+e)
^3*c^3)/(1+cos(f*x+e))/sin(f*x+e)^3/a^3
```

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((c+d*sec(f*x+e))^3/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^3}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^3/(a + a/cos(e + f*x))^(5/2),x)
[Out] int((c + d/cos(e + f*x))^3/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{\left(c+d\sec\left(e+fx\right)\right)^3}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**3/(a+a*sec(f*x+e))**(5/2),x)
[Out] Integral((c + d*sec(e + f*x))**3/(a*(sec(e + f*x) + 1))**(5/2), x)
```

3.179 $\int \frac{(c+d\sec(e+fx))^2}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=468

$$-\frac{\left(c^2-d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2c^2\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{a}}\right)}{a^{3/2}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{\sqrt{2}c^2\tan(}{a^{3/2}f\sqrt{a-a}}$$

```
[Out] -1/4*(c-d)^2*tan(f*x+e)/a^2/f/(1+sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)-3/16*
(c-d)^2*tan(f*x+e)/a^2/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)-1/2*(c^2-d^2
)*tan(f*x+e)/a^2/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*c^2*arctanh((a-a
*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+
a*sec(f*x+e))^(1/2)-3/32*(c-d)^2*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)
/a^(1/2))*tan(f*x+e)/a^(3/2)/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+
e))^(1/2)-1/4*(c^2-d^2)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))
*tan(f*x+e)/a^(3/2)/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
-c^2*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*2^(1/2)*tan(f*x+e)
/a^(3/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 468, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {3940, 180, 63, 206, 51}

$$-\frac{\left(c^2-d^2\right)\tan(e+fx)}{2a^2f(\sec(e+fx)+1)\sqrt{a\sec(e+fx)+a}}-\frac{\left(c^2-d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{2\sqrt{2}a^{3/2}f\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2c^2\tan(e+}{a^{3/2}f\sqrt{a-a\,\mathrm{se}}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] -((c - d)^2*Tan[e + f*x])/(4*a^2*f*(1 + Sec[e + f*x])^2*Sqrt[a + a*Sec[e +
f*x]]) - (3*(c - d)^2*Tan[e + f*x])/(16*a^2*f*(1 + Sec[e + f*x])*Sqrt[a + a
*Sec[e + f*x]]) - ((c^2 - d^2)*Tan[e + f*x])/(2*a^2*f*(1 + Sec[e + f*x])*Sq
rt[a + a*Sec[e + f*x]]) + (2*c^2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*
Tan[e + f*x])/(a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
 - (Sqrt[2]*c^2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e +
 f*x])/(a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) - (3*(
c - d)^2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/
(16*Sqrt[2]*a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) -
((c^2 - d^2)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*
x])/(2*Sqrt[2]*a^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^2}{(a+a\sec(e+fx))^{5/2}}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\operatorname{Subst}\left(\int \frac{(c+dx)^2}{x\sqrt{a-ax}\,(a+ax)^3}\,dx,x,\sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\operatorname{Subst}\left(\int \left(\frac{c^2}{a^3x\sqrt{a-ax}} - \frac{(c-d)^2}{a^3(1+x)^3\sqrt{a-ax}} + \frac{-c^2+d^2}{a^3(1+x)^2\sqrt{a-ax}} - \frac{c^2}{a^3(1+x)\sqrt{a-a}}\right.\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(c^2\tan(e+fx)\right)\operatorname{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{af\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{\left(c^2\tan(e+fx)\right)\operatorname{Subst}\left(\int\right.}{af\sqrt{a-a\sec(e+}}$$

$$= -\frac{(c-d)^2\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{\left(c^2-d^2\right)\tan(e+fx)}{2a^2f(1+\sec(e+fx))\sqrt{a+a\sec(e}}$$

$$= -\frac{(c-d)^2\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{3(c-d)^2\tan(e+fx)}{16a^2f(1+\sec(e+fx))\sqrt{a+a\sec(}}$$

$$= -\frac{(c-d)^2\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{3(c-d)^2\tan(e+fx)}{16a^2f(1+\sec(e+fx))\sqrt{a+a\sec(}}$$

$$= -\frac{(c-d)^2\tan(e+fx)}{4a^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{3(c-d)^2\tan(e+fx)}{16a^2f(1+\sec(e+fx))\sqrt{a+a\sec(}}$$

Mathematica [C] time = 27.95, size = 16249, normalized size = 34.72

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])^2/(a + a*Sec[e + f*x])^(5/2),x]
```

[Out] Result too large to show

fricas [A] time = 23.94, size = 782, normalized size = 1.67

$$\left[\frac{\sqrt{2}\left(\left(43\,c^2-6\,cd-5\,d^2\right)\cos\left(fx+e\right)^3+3\left(43\,c^2-6\,cd-5\,d^2\right)\cos\left(fx+e\right)^2+43\,c^2-6\,cd-5\,d^2+3\left(43\,c^2\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] [1/64*(sqrt(2)*((43*c^2 - 6*c*d - 5*d^2)*cos(f*x + e)^3 + 3*(43*c^2 - 6*c*d
 - 5*d^2)*cos(f*x + e)^2 + 43*c^2 - 6*c*d - 5*d^2 + 3*(43*c^2 - 6*c*d - 5*d
^2)*cos(f*x + e))*sqrt(-a)*log((2*sqrt(2)*sqrt(-a)*sqrt((a*cos(f*x + e) + a
)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + 3*a*cos(f*x + e)^2 + 2*a*cos(f*
x + e) - a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) - 64*(c^2*cos(f*x + e)^3
 + 3*c^2*cos(f*x + e)^2 + 3*c^2*cos(f*x + e) + c^2)*sqrt(-a)*log((2*a*cos(f
*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)
*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1)) - 4*((15*c^2 - 14*c
*d - d^2)*cos(f*x + e)^2 + (11*c^2 - 6*c*d - 5*d^2)*cos(f*x + e))*sqrt((a*c
os(f*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*
f*cos(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f), 1/32*(sqrt(2)*((43*c^2 -
6*c*d - 5*d^2)*cos(f*x + e)^3 + 3*(43*c^2 - 6*c*d - 5*d^2)*cos(f*x + e)^2 +
 43*c^2 - 6*c*d - 5*d^2 + 3*(43*c^2 - 6*c*d - 5*d^2)*cos(f*x + e))*sqrt(a)*
arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)/(sqrt(a
)*sin(f*x + e))) - 64*(c^2*cos(f*x + e)^3 + 3*c^2*cos(f*x + e)^2 + 3*c^2*co
s(f*x + e) + c^2)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*co
s(f*x + e)/(sqrt(a)*sin(f*x + e))) - 2*((15*c^2 - 14*c*d - d^2)*cos(f*x + e
)^2 + (11*c^2 - 6*c*d - 5*d^2)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(
f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*
a^3*f*cos(f*x + e) + a^3*f)]
```

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((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(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
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/
t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
 (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2
)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assumes constant si
```

```
gn by intervals (correct if the argument is real):Check [abs(cos(f*t_nostep
+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2
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ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
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ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is po
sitive. Hint: run assume to make assumptions on a variableWarning, assuming
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 (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2
)>(-4*pi/t_nostep/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) wer
e not checkedUnable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
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sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)War
ning, integration of abs or sign assumes constant sign by intervals (correc
t if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.84in
dex.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.64, size = 1133, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/32/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(32*arctanh(1/2*(-2*cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*cos(f*x+e)^2*2^(1/2)*s
in(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*c^2+64*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)
/cos(f*x+e)*2^(1/2))*2^(1/2)*sin(f*x+e)*c^2*cos(f*x+e)+43*ln(-(-(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*cos(f*x+e)^2
*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*c^2-6*ln(-(-(-2*cos(f*x+e)
/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*cos(f*x+e)^2*si
n(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*c*d-5*ln(-(-(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*cos(f*x+e)^2*sin(f
*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d^2+32*(-2*cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos
(f*x+e)*2^(1/2))*2^(1/2)*c^2*sin(f*x+e)+86*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/si
n(f*x+e))*sin(f*x+e)*c^2*cos(f*x+e)-12*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*
x+e))*sin(f*x+e)*c*d*cos(f*x+e)-10*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(
-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e)
)*sin(f*x+e)*d^2*cos(f*x+e)+43*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^
2*sin(f*x+e)-6*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d*sin(f*x+e)-5*(
-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1
/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*d^2*sin(f*x+e)-30*cos(f*x+e)^3*c^2
+28*cos(f*x+e)^3*c*d+2*cos(f*x+e)^3*d^2+8*cos(f*x+e)^2*c^2-16*cos(f*x+e)^2*
c*d+8*cos(f*x+e)^2*d^2+22*cos(f*x+e)*c^2-12*cos(f*x+e)*c*d-10*cos(f*x+e)*d^
2)/(1+cos(f*x+e))^2/sin(f*x+e)/a^3
```

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((c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^2}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^2/(a + a/cos(e + f*x))^(5/2),x)
[Out] int((c + d/cos(e + f*x))^2/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{\left(c+d\sec\left(e+fx\right)\right)^2}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**2/(a+a*sec(f*x+e))**(5/2),x)
[Out] Integral((c + d*sec(e + f*x))**2/(a*(sec(e + f*x) + 1))**(5/2), x)
```

3.180 $\int \frac{c+d\sec(e+fx)}{(a+a\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=164

$$-\frac{(43c-3d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{16\sqrt{2}a^{5/2}f}+\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{(11c-3d)\tan(e+fx)}{16af(a\sec(e+fx)+a)^{3/2}}-\frac{(c-d)\tan(e+fx)}{4f(a\sec(e+fx)+a}$$

```
[Out] 2*c*arctan(a^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/f-1/32*(43*c-
3*d)*arctan(1/2*a^(1/2)*tan(f*x+e)*2^(1/2)/(a+a*sec(f*x+e))^(1/2))/a^(5/2)/
f*2^(1/2)-1/4*(c-d)*tan(f*x+e)/f/(a+a*sec(f*x+e))^(5/2)-1/16*(11*c-3*d)*tan
(f*x+e)/a/f/(a+a*sec(f*x+e))^(3/2)
```

Rubi [A] time = 0.26, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {3922, 3920, 3774, 203, 3795}

$$-\frac{(43c-3d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}}\right)}{16\sqrt{2}a^{5/2}f}+\frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}}\right)}{a^{5/2}f}-\frac{(11c-3d)\tan(e+fx)}{16af(a\sec(e+fx)+a)^{3/2}}-\frac{(c-d)\tan(e+fx)}{4f(a\sec(e+fx)+a}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])/(a + a*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*c*ArcTan[(Sqrt[a]*Tan[e + f*x])/Sqrt[a + a*Sec[e + f*x]]])/(a^(5/2)*f) -
 ((43*c - 3*d)*ArcTan[(Sqrt[a]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*
x]])])/(16*Sqrt[2]*a^(5/2)*f) - ((c - d)*Tan[e + f*x])/(4*f*(a + a*Sec[e +
f*x])^(5/2)) - ((11*c - 3*d)*Tan[e + f*x])/(16*a*f*(a + a*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 3774

```
Int[Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[(-2*b)/d,
 Subst[Int[1/(a + x^2), x], x, (b*Cot[c + d*x])/Sqrt[a + b*Csc[c + d*x]]],
x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3795

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Dist[-2/f, Subst[Int[1/(2*a + x^2), x], x, (b*Cot[e + f*x])/Sqrt[
a + b*Csc[e + f*x]]], x] /; FreeQ[{a, b, e, f}, x] && EqQ[a^2 - b^2, 0]
```

Rule 3920

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c/a, Int[Sqrt[a + b*Csc[e + f*x]], x], x] - D
ist[(b*c - a*d)/a, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; Fre
eQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0]
```

Rule 3922

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[((b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f*
```

```
x])^m)/(b*f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x
])^(m + 1)*Simp[a*c*(2*m + 1) - (b*c - a*d)*(m + 1)*Csc[e + f*x], x], x], x
] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && EqQ
[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{c+d\sec(e+fx)}{(a+a\sec(e+fx))^{5/2}}\,dx = -\frac{(c-d)\tan(e+fx)}{4f(a+a\sec(e+fx))^{5/2}} - \frac{\int \frac{-4ac+\frac{3}{2}a(c-d)\sec(e+fx)}{(a+a\sec(e+fx))^{3/2}}\,dx}{4a^2}$$

$$= -\frac{(c-d)\tan(e+fx)}{4f(a+a\sec(e+fx))^{5/2}} - \frac{(11c-3d)\tan(e+fx)}{16af(a+a\sec(e+fx))^{3/2}} + \frac{\int \frac{8a^2c-\frac{1}{4}a^2(11c-3d)\sec(e+}{\sqrt{a+a\sec(e+fx)}}}{8a^4}$$

$$= -\frac{(c-d)\tan(e+fx)}{4f(a+a\sec(e+fx))^{5/2}} - \frac{(11c-3d)\tan(e+fx)}{16af(a+a\sec(e+fx))^{3/2}} + \frac{c\int \sqrt{a+a\sec(e+fx}}{a^3}$$

$$= -\frac{(c-d)\tan(e+fx)}{4f(a+a\sec(e+fx))^{5/2}} - \frac{(11c-3d)\tan(e+fx)}{16af(a+a\sec(e+fx))^{3/2}} - \frac{(2c)\operatorname{Subst}\left(\int \frac{1}{a+x^2}\,dx\right.}{a^2 f}$$

$$= \frac{2c\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}}\right)}{a^{5/2}f} - \frac{(43c-3d)\tan^{-1}\left(\frac{\sqrt{a}\tan(e+fx)}{\sqrt{2}\sqrt{a+a\sec(e+fx)}}\right)}{16\sqrt{2}a^{5/2}f} - \frac{(c-d)\tan(}{4f(a+a\sec(e}$$

Mathematica [C] time = 26.95, size = 11243, normalized size = 68.55

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])/(a + a*Sec[e + f*x])^(5/2),x]
[Out] Result too large to show
```

fricas [B] time = 6.36, size = 670, normalized size = 4.09

$$\left[\frac{\sqrt{2}\left((43c-3d)\cos\left(fx+e\right)^3+3(43c-3d)\cos\left(fx+e\right)^2+3(43c-3d)\cos\left(fx+e\right)+43c-3d\right)\sqrt{-a}\,\log}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(5/2),x, algorithm="fricas")
[Out] [1/64*(sqrt(2)*((43*c - 3*d)*cos(f*x + e)^3 + 3*(43*c - 3*d)*cos(f*x + e)^2
 + 3*(43*c - 3*d)*cos(f*x + e) + 43*c - 3*d)*sqrt(-a)*log((2*sqrt(2)*sqrt(-
a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + 3*a*
cos(f*x + e)^2 + 2*a*cos(f*x + e) - a)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1
)) - 64*(c*cos(f*x + e)^3 + 3*c*cos(f*x + e)^2 + 3*c*cos(f*x + e) + c)*sqrt
(-a)*log((2*a*cos(f*x + e)^2 + 2*sqrt(-a)*sqrt((a*cos(f*x + e) + a)/cos(f*x
 + e))*cos(f*x + e)*sin(f*x + e) + a*cos(f*x + e) - a)/(cos(f*x + e) + 1))
- 4*((15*c - 7*d)*cos(f*x + e)^2 + (11*c - 3*d)*cos(f*x + e))*sqrt((a*cos(f
```

```
*x + e) + a)/cos(f*x + e))*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*co
s(f*x + e)^2 + 3*a^3*f*cos(f*x + e) + a^3*f), 1/32*(sqrt(2)*((43*c - 3*d)*c
os(f*x + e)^3 + 3*(43*c - 3*d)*cos(f*x + e)^2 + 3*(43*c - 3*d)*cos(f*x + e)
 + 43*c - 3*d)*sqrt(a)*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 64*(c*cos(f*x + e)^3 + 3*c*cos(f*
x + e)^2 + 3*c*cos(f*x + e) + c)*sqrt(a)*arctan(sqrt((a*cos(f*x + e) + a)/c
os(f*x + e))*cos(f*x + e)/(sqrt(a)*sin(f*x + e))) - 2*((15*c - 7*d)*cos(f*x
 + e)^2 + (11*c - 3*d)*cos(f*x + e))*sqrt((a*cos(f*x + e) + a)/cos(f*x + e)
)*sin(f*x + e))/(a^3*f*cos(f*x + e)^3 + 3*a^3*f*cos(f*x + e)^2 + 3*a^3*f*co
s(f*x + e) + a^3*f)]
```

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((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(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)
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-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)
Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check s
ign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nost
ep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_no
step/2)Discontinuities at zeroes of cos(f*t_nostep+exp(1)) were not checked
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check s
ign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nost
ep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi
/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*
pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Una
ble to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign
: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/
2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_noste
p/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/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)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)Warning, integration of abs or sign assumes constant sign by intervals
(correct if the argument is real):Check [abs(t_nostep^2-1)]Evaluation time:
 1.48index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 1.73, size = 824, normalized size = 5.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(5/2),x)
```

```
[Out] -1/32/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*(32*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f
*x+e)*2^(1/2))*2^(1/2)*sin(f*x+e)*cos(f*x+e)^2*c+64*2^(1/2)*sin(f*x+e)*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c*cos(f*x+e)+43*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f
*x+e)-1)/sin(f*x+e))*sin(f*x+e)*cos(f*x+e)^2*c-3*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)
-1)/sin(f*x+e))*sin(f*x+e)*cos(f*x+e)^2*d+32*2^(1/2)*sin(f*x+e)*(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
sin(f*x+e)/cos(f*x+e)*2^(1/2))*c+86*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)
))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1
)/sin(f*x+e))*c*cos(f*x+e)-6*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f
```

```
*x+e))*d*cos(f*x+e)+43*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-
(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))
*c-3*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*d-30*cos(f*x+e)^3
*c+14*cos(f*x+e)^3*d+8*cos(f*x+e)^2*c-8*cos(f*x+e)^2*d+22*c*cos(f*x+e)-6*d*
cos(f*x+e))/(1+cos(f*x+e))^2/sin(f*x+e)/a^3
```

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

$$\int \frac{d \sec\left(fx+e\right)+c}{\left(a \sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e) + c)/(a*sec(f*x + e) + a)^(5/2), x)
```

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

$$\int \frac{c+\frac{d}{\cos\left(e+f\,x\right)}}{{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))/(a + a/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c + d/cos(e + f*x))/(a + a/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{c + d \sec{\left(e + fx \right)}}{\left(a \left(\sec{\left(e + fx \right)} + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+a*sec(f*x+e))**(5/2),x)
```

```
[Out] Integral((c + d*sec(e + f*x))/(a*(sec(e + f*x) + 1))**(5/2), x)
```

3.181 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))}\,dx$

Optimal. Leaf size=592

$$-\frac{\sqrt{2}\left(c^2-3cd+3d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{a^{3/2}f(c-d)^3\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2d^{7/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{a^{3/2}cf(c-d)^3\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+f}}$$

```
[Out] -1/4*tan(f*x+e)/a^2/(c-d)/f/(1+sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)-1/2*(c-
2*d)*tan(f*x+e)/a^2/(c-d)^2/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)-3/16*ta
n(f*x+e)/a^2/(c-d)/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*arctanh((a-a*s
ec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/c/f/(a-a*sec(f*x+e))^(1/2)/(a+
a*sec(f*x+e))^(1/2)-1/4*(c-2*d)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/
a^(1/2))*tan(f*x+e)/a^(3/2)/(c-d)^2/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*s
ec(f*x+e))^(1/2)-3/32*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*t
an(f*x+e)/a^(3/2)/(c-d)/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(
1/2)-(c^2-3*c*d+3*d^2)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*
2^(1/2)*tan(f*x+e)/a^(3/2)/(c-d)^3/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e)
)^(1/2)+2*d^(7/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2
))*tan(f*x+e)/a^(3/2)/c/(c-d)^3/f/(c+d)^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*s
ec(f*x+e))^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 592, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = $\{3940, 180, 63, 206, 51, 208\}$

$$-\frac{\sqrt{2}\left(c^2-3cd+3d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e+fx)}}{\sqrt{2}\sqrt{a}}\right)}{a^{3/2}f(c-d)^3\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}+\frac{2d^{7/2}\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{a^{3/2}cf(c-d)^3\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+f}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])),x]
```

```
[Out] -Tan[e + f*x]/(4*a^2*(c - d)*f*(1 + Sec[e + f*x])^2*Sqrt[a + a*Sec[e + f*x]
]) - ((c - 2*d)*Tan[e + f*x])/(2*a^2*(c - d)^2*f*(1 + Sec[e + f*x])*Sqrt[a
+ a*Sec[e + f*x]]) - (3*Tan[e + f*x])/(16*a^2*(c - d)*f*(1 + Sec[e + f*x])*
Sqrt[a + a*Sec[e + f*x]]) + (2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]]*Ta
n[e + f*x])/(a^(3/2)*c*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
 - ((c - 2*d)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f
*x])/(2*Sqrt[2]*a^(3/2)*(c - d)^2*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec
[e + f*x]]) - (3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e
+ f*x])/(16*Sqrt[2]*a^(3/2)*(c - d)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*S
ec[e + f*x]]) - (Sqrt[2]*(c^2 - 3*c*d + 3*d^2)*ArcTanh[Sqrt[a - a*Sec[e + f
*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(a^(3/2)*(c - d)^3*f*Sqrt[a - a*Sec[e
 + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (2*d^(7/2)*ArcTanh[(Sqrt[d]*Sqrt[a - a
*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(a^(3/2)*c*(c - d)^3*S
qrt[c + d]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)^3(c+dx)}\,dx, x, \sec(e+fx)\right)}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\mathrm{Subst}\left(\int \left(\frac{1}{a^3cx\sqrt{a-ax}} - \frac{1}{a^3(c-d)(1+x)^3\sqrt{a-ax}} + \frac{}{a^3(\cdots}\right.\right.}{f\sqrt{a-a\sec(\cdots}}$$

$$= -\frac{\tan(e+fx)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{acf\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{((c-2d)\,\mathrm{ta}\cdots}{a(c-\cdots}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-d)\cdots}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-d)\cdots}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-d)\cdots}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-d)\cdots}$$

Mathematica [C] time = 37.00, size = 486155, normalized size = 821.21

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])),x]
[Out] Result too large to show
```

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/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),x, algorithm="fricas")
[Out] Timed out
```

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(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),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
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/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_no
step/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable t
o check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*
pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, integration of abs or sign assume
s constant sign by intervals (correct if the argument is real):Check [abs(c
os(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nos
tep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to c
heck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/
t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*p
i/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unab
le to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign:
 (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2
)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep
/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to chec
k sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_n
ostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t
_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2
*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(
-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)
Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Warning, assuming
 -2*a+a is positive. Hint: run assume to make assumptions on a variableWarn
ing, assuming -2*a+a is positive. Hint: run assume to make assumptions on a
 variableWarning, assuming -2*a+a is positive. Hint: run assume to make ass
umptions on a variableWarning, assuming -2*a+a is positive. Hint: run assum
e to make assumptions on a variableUnable to check sign: (4*pi/t_nostep/2)>
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 integration of abs or sign assumes constant sign by intervals (correct if
the argument is real):Check [abs(t_nostep^2-1)]Evaluation time: 1.52index.c
c index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 2.05, size = 3860, normalized size = 6.52

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] -1/32/f*(-1+cos(f*x+e))^2*(115*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/
2)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d^2-16*2^(1/2)*
sin(f*x+e)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-2*((d/(c-d
))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*
(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-c*sin(f*x
+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(c-d))^(1/2))/(((c+d
)*(c-d))^(1/2)*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d))*d^4+32*2^(1/2)*si
n(f*x+e)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(2*((d/(c-d))^(1
/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c
-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^
(1/2)*cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-
d))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))*d^4+43*(d/(c-d))^(1/2)
*sin(f*x+e)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-
(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c
^3+16*2^(1/2)*sin(f*x+e)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
ln(2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*
x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x
+e)+((c+d)*(c-d))^(1/2)*cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^
(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))*d^4-
30*(d/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*cos(f*x+e)^3*c^3+8*(d/(c-d))^(1/2)*(
(c+d)*(c-d))^(1/2)*cos(f*x+e)^2*c^3+22*(d/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*
cos(f*x+e)*c^3-32*2^(1/2)*sin(f*x+e)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*ln(-2*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/
2)*c*sin(f*x+e)-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*d*sin(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2)*cos(f*x+e)+((c
+d)*(c-d))^(1/2))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)
-c+d))*d^4-16*2^(1/2)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-2
*((d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)
-2^(1/2)*(d/(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)-
c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2)*cos(f*x+e)+((c+d)*(c-d))^(1/2
```

))/(((c+d)*(c-d))^(1/2)*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c+d))*d^4-96*2
^(1/2)*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)
/cos(f*x+e)*2^(1/2))*c^2*d+96*2^(1/2)*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-
d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c*d^2-252*(d/(c-d))^(1/
2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/
sin(f*x+e))*c^2*d+230*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*
x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c*d^2+32*2^(1/2)*(d/(c-d))^(
1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(
f*x+e)*2^(1/2))*c^3-32*2^(1/2)*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/
2)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*d^3+64*2^(1/2)*(d
/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*x+e)*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+
e)/cos(f*x+e)*2^(1/2))*c^3-64*2^(1/2)*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-
d))^(1/2)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*d^3-126*(d/(
c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+c
os(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos
(f*x+e)-1)/sin(f*x+e))*c^2*d+76*(d/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*cos(f*x
+e)^3*c^2*d-46*(d/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*cos(f*x+e)^3*c*d^2-16*(d
/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*cos(f*x+e)^2*c^2*d+8*(d/(c-d))^(1/2)*((c+
d)*(c-d))^(1/2)*cos(f*x+e)^2*c*d^2-60*(d/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*c
os(f*x+e)*c^2*d+38*(d/(c-d))^(1/2)*((c+d)*(c-d))^(1/2)*cos(f*x+e)*c*d^2+16*
2^(1/2)*sin(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(2*((d/(c-d))^(1/
2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*2^(1/2)*c*sin(f*x+e)-2^(1/2)*(d/(c-
d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*d*sin(f*x+e)+((c+d)*(c-d))^(
1/2)*cos(f*x+e)-c*sin(f*x+e)+d*sin(f*x+e)-((c+d)*(c-d))^(1/2))/(((c+d)*(c-d
))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)+c-d))*d^4-96*2^(1/2)*(d/(c-d)
)^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/c
os(f*x+e)*2^(1/2))*c^2*d+96*2^(1/2)*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d)
)^(1/2)*cos(f*x+e)^2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*c
os(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c*d^2-192*2^
(1/2)*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*x+e)*(-2*cos(f*x
+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^2*d+192*2^(1/2)*(d/(c-d))^(1/2)*sin(f*x+e)
((c+d)(c-d))^(1/2)*cos(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctan
h(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c
d^2+43(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos(f*x+e)^2*(-2*cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*si
n(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^3+32*2^(1/2)*(d/(c-d))^(1/2)*sin(f*x+e
)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*arctanh(1/2*(-2*
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/cos(f*x+e)*2^(1/2))*c^3-32*2^(1
/2)*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*arctanh(1/2*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)/co
s(f*x+e)*2^(1/2))*d^3+86*(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*cos
(f*x+e)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^3-126*(d/(c-d))^(1/2)*s
in(f*x+e)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*ln(-(-(-
2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f*x+e)-1)/sin(f*x+e))*c^2
d+115(d/(c-d))^(1/2)*sin(f*x+e)*((c+d)*(c-d))^(1/2)*(-2*cos(f*x+e)/(1+cos
(f*x+e)))^(1/2)*ln(-(-(-2*cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+cos(f
*x+e)-1)/sin(f*x+e))*c*d^2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)^
5/(d/(c-d))^(1/2)/(c-d)^3/c/((c+d)*(c-d))^(1/2)/a^3

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

$$\int \frac{1}{\left(a\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(d\sec\left(fx+e\right)+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate(1/((a*sec(f*x + e) + a)^(5/2)*(d*sec(f*x + e) + c)), x)
```

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

$$\int \frac{1}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))), x)
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}\left(c+d\sec\left(e+fx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(5/2)*(c + d*sec(e + f*x))), x)
```

3.182 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=756

$$\frac{2d^{7/2}(4c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{a^{3/2}c^2f(c-d)^4\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{\sqrt{2}\left(c^2-4cd+6d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e}}{\sqrt{2}\sqrt{a}}\right.}{a^{3/2}f(c-d)^4\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)}}$$

```
[Out] -1/4*tan(f*x+e)/a^2/(c-d)^2/f/(1+sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)-1/2*(
c-3*d)*tan(f*x+e)/a^2/(c-d)^3/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)-3/16*
tan(f*x+e)/a^2/(c-d)^2/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+d^4*tan(f*x+
e)/a^2/c/(c-d)^3/(c+d)/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+2*arctanh(
(a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/c^2/f/(a-a*sec(f*x+e))^(
1/2)/(a+a*sec(f*x+e))^(1/2)+d^(7/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/
a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/a^(3/2)/c/(c-d)^3/(c+d)^(3/2)/f/(a-a*sec(f*
x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-1/4*(c-3*d)*arctanh(1/2*(a-a*sec(f*x+e))
^(1/2)*2^(1/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/(c-d)^3/f*2^(1/2)/(a-a*sec(f*x+e
))^(1/2)/(a+a*sec(f*x+e))^(1/2)-3/32*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(
1/2)/a^(1/2))*tan(f*x+e)/a^(3/2)/(c-d)^2/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(
a+a*sec(f*x+e))^(1/2)-(c^2-4*c*d+6*d^2)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*
2^(1/2)/a^(1/2))*2^(1/2)*tan(f*x+e)/a^(3/2)/(c-d)^4/f/(a-a*sec(f*x+e))^(1/2
)/(a+a*sec(f*x+e))^(1/2)+2*(4*c-d)*d^(7/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))
^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/a^(3/2)/c^2/(c-d)^4/f/(c+d)^(1/2)/(a
-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.63, antiderivative size = 756, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3940, 180, 63, 206, 51, 208}

$$\frac{2d^{7/2}(4c-d)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a-a\sec(e+fx)}}{\sqrt{a}\sqrt{c+d}}\right)}{a^{3/2}c^2f(c-d)^4\sqrt{c+d}\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)+a}}-\frac{\sqrt{2}\left(c^2-4cd+6d^2\right)\tan(e+fx)\tanh^{-1}\left(\frac{\sqrt{a-a\sec(e}}{\sqrt{2}\sqrt{a}}\right.}{a^{3/2}f(c-d)^4\sqrt{a-a\sec(e+fx)}\sqrt{a\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^2),x]
```

```
[Out] -Tan[e + f*x]/(4*a^2*(c - d)^2*f*(1 + Sec[e + f*x])^2*Sqrt[a + a*Sec[e + f*
x]]) - ((c - 3*d)*Tan[e + f*x])/(2*a^2*(c - d)^3*f*(1 + Sec[e + f*x])*Sqrt[
a + a*Sec[e + f*x]]) - (3*Tan[e + f*x])/(16*a^2*(c - d)^2*f*(1 + Sec[e + f*
x])*Sqrt[a + a*Sec[e + f*x]]) + (2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]
]*Tan[e + f*x])/(a^(3/2)*c^2*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e +
f*x]]) - ((c - 3*d)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan
[e + f*x])/(2*Sqrt[2]*a^(3/2)*(c - d)^3*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a +
 a*Sec[e + f*x]]) - (3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*
Tan[e + f*x])/(16*Sqrt[2]*a^(3/2)*(c - d)^2*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt
[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c^2 - 4*c*d + 6*d^2)*ArcTanh[Sqrt[a - a*S
ec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(a^(3/2)*(c - d)^4*f*Sqrt[a -
 a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (d^(7/2)*ArcTanh[(Sqrt[d]*Sqrt
[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(a^(3/2)*c*(c -
d)^3*(c + d)^(3/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (
2*(4*c - d)*d^(7/2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqr
t[c + d])]*Tan[e + f*x])/(a^(3/2)*c^2*(c - d)^4*Sqrt[c + d]*f*Sqrt[a - a*Se
c[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (d^4*Tan[e + f*x])/(a^2*c*(c - d)^3
*(c + d)*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
```

```
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^2}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)^3(c+dx)^2}\,dx, x, \sec(e+f\right.}{f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{1}{a^3c^2x\sqrt{a-ax}} - \frac{1}{a^3(c-d)^2(1+x)^3\sqrt{a-ax}} + \right.\right.}{}$$

$$= -\frac{\tan(e+fx)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx, x, \sec(e+fx)\right)}{ac^2f\sqrt{a-a\sec(e+fx)}\sqrt{a+a\sec(e+fx)}} + \frac{((c-3d)\,\text{t}}{a(c}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^2f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c-}$$

Mathematica [C] time = 40.04, size = 688080, normalized size = 910.16

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^2),x]
```

```
[Out] Result too large to show
```

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/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^2,x, algorithm="fricas"
)
```

```
[Out] Timed out
```

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(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^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
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
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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)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_no
step/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi
/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*
pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)War
ning, integration of abs or sign assumes constant sign by intervals (correc
t if the argument is real):Check [abs(cos(f*t_nostep+exp(1)))]Unable to che
ck sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_
nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/
t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable
 to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (
2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>
(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2
)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check
sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nos
tep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_n
ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
 check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*p
i/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2
*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Un
able to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sig
n: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to check sign: (2*pi/t_nostep
/2)>(-2*pi/t_nostep/2)Warning, assuming -2*a+a is positive. Hint: run assum
e to make assumptions on a variableWarning, assuming -2*a+a is positive. Hi
nt: run assume to make assumptions on a variableWarning, assuming -2*a+a is
 positive. Hint: run assume to make assumptions on a variableWarning, assum
ing -2*a+a is positive. Hint: run assume to make assumptions on a variableU
nable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check si
gn: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_noste
p/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nos
tep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to c
heck sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/
t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*p
i/t_nostep/2)Unable to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unab
le to check sign: (4*pi/t_nostep/2)>(-4*pi/t_nostep/2)Unable to check sign:
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ostep/2)Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_nostep/2)Unable to
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i/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to che
ck sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^2-1)]Evaluation time: 1.82index.cc index_m i_lex_is_greater Error: Ba
d Argument Value
```

maple [B] time = 7.79, size = 197500, normalized size = 261.24

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^2,x)
```

```
[Out] result too large to display
```

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(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^2,x, algorithm="maxima"
)
```

```
[Out] Timed out
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))^2),x)
```

```
[Out] \text{Hanged}
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}\left(c+d\sec\left(e+fx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e))**2,x)
```

```
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(5/2)*(c + d*sec(e + f*x))**2), x)
```

3.183 $\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=999

$$\frac{(4c-d)\tan(e+fx)d^4}{a^2c^2(c-d)^4(c+d)f\sqrt{\sec(e+fx)a+a}\,(c+d\sec(e+fx))}+\frac{3\tan(e+fx)d^4}{4a^2c(c-d)^3(c+d)^2f\sqrt{\sec(e+fx)a+a}\,(c+d\sec}$$

```
[Out] -1/4*tan(f*x+e)/a^2/(c-d)^3/f/(1+sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)-1/2*(
c-4*d)*tan(f*x+e)/a^2/(c-d)^4/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)-3/16*
tan(f*x+e)/a^2/(c-d)^3/f/(1+sec(f*x+e))/(a+a*sec(f*x+e))^(1/2)+1/2*d^4*tan(
f*x+e)/a^2/c/(c-d)^3/(c+d)/f/(c+d*sec(f*x+e))^2/(a+a*sec(f*x+e))^(1/2)+3/4*
d^4*tan(f*x+e)/a^2/c/(c-d)^3/(c+d)^2/f/(c+d*sec(f*x+e))/(a+a*sec(f*x+e))^(1
/2)+(4*c-d)*d^4*tan(f*x+e)/a^2/c^2/(c-d)^4/(c+d)/f/(c+d*sec(f*x+e))/(a+a*se
c(f*x+e))^(1/2)+2*arctanh((a-a*sec(f*x+e))^(1/2)/a^(1/2))*tan(f*x+e)/a^(3/2
)/c^3/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+3/4*d^(7/2)*arctanh(d
^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e)/a^(3/2)/c/(c-
d)^3/(c+d)^(5/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+(4*c-d)*d^
(7/2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(c+d)^(1/2))*tan(f*x+e
)/a^(3/2)/c^2/(c-d)^4/(c+d)^(3/2)/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))
^(1/2)-1/4*(c-4*d)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*tan(
f*x+e)/a^(3/2)/(c-d)^4/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1
/2)-3/32*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*tan(f*x+e)/a^(
3/2)/(c-d)^3/f*2^(1/2)/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)-(c^2-5
*c*d+10*d^2)*arctanh(1/2*(a-a*sec(f*x+e))^(1/2)*2^(1/2)/a^(1/2))*2^(1/2)*ta
n(f*x+e)/a^(3/2)/(c-d)^5/f/(a-a*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2)+2*
d^(7/2)*(10*c^2-5*c*d+d^2)*arctanh(d^(1/2)*(a-a*sec(f*x+e))^(1/2)/a^(1/2)/(
c+d)^(1/2))*tan(f*x+e)/a^(3/2)/c^3/(c-d)^5/f/(c+d)^(1/2)/(a-a*sec(f*x+e))^(
1/2)/(a+a*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.91, antiderivative size = 999, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {3940, 180, 63, 206, 51, 208}

$$\frac{(4c-d)\tan(e+fx)d^4}{a^2c^2(c-d)^4(c+d)f\sqrt{\sec(e+fx)a+a}\,(c+d\sec(e+fx))}+\frac{3\tan(e+fx)d^4}{4a^2c(c-d)^3(c+d)^2f\sqrt{\sec(e+fx)a+a}\,(c+d\sec}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^3),x]
```

```
[Out] -Tan[e + f*x]/(4*a^2*(c - d)^3*f*(1 + Sec[e + f*x])^2*Sqrt[a + a*Sec[e + f*
x]]) - ((c - 4*d)*Tan[e + f*x])/(2*a^2*(c - d)^4*f*(1 + Sec[e + f*x])*Sqrt[
a + a*Sec[e + f*x]]) - (3*Tan[e + f*x])/(16*a^2*(c - d)^3*f*(1 + Sec[e + f*
x])*Sqrt[a + a*Sec[e + f*x]]) + (2*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/Sqrt[a]
]*Tan[e + f*x])/(a^(3/2)*c^3*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e +
f*x]]) - ((c - 4*d)*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan
[e + f*x])/(2*Sqrt[2]*a^(3/2)*(c - d)^4*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a +
 a*Sec[e + f*x]]) - (3*ArcTanh[Sqrt[a - a*Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*
Tan[e + f*x])/(16*Sqrt[2]*a^(3/2)*(c - d)^3*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt
[a + a*Sec[e + f*x]]) - (Sqrt[2]*(c^2 - 5*c*d + 10*d^2)*ArcTanh[Sqrt[a - a*
Sec[e + f*x]]/(Sqrt[2]*Sqrt[a])]*Tan[e + f*x])/(a^(3/2)*(c - d)^5*f*Sqrt[a
- a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (3*d^(7/2)*ArcTanh[(Sqrt[d]*S
qrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e + f*x])/(4*a^(3/2)*c*
(c - d)^3*(c + d)^(5/2)*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]
) + ((4*c - d)*d^(7/2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*
Sqrt[c + d])]*Tan[e + f*x])/(a^(3/2)*c^2*(c - d)^4*(c + d)^(3/2)*f*Sqrt[a -
```

```
 a*Sec[e + f*x]]*Sqrt[a + a*Sec[e + f*x]]) + (2*d^(7/2)*(10*c^2 - 5*c*d + d
^2)*ArcTanh[(Sqrt[d]*Sqrt[a - a*Sec[e + f*x]])/(Sqrt[a]*Sqrt[c + d])]*Tan[e
 + f*x])/(a^(3/2)*c^3*(c - d)^5*Sqrt[c + d]*f*Sqrt[a - a*Sec[e + f*x]]*Sqrt
[a + a*Sec[e + f*x]]) + (d^4*Tan[e + f*x])/(2*a^2*c*(c - d)^3*(c + d)*f*Sqr
t[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])^2) + (3*d^4*Tan[e + f*x])/(4*a^2
*c*(c - d)^3*(c + d)^2*f*Sqrt[a + a*Sec[e + f*x]]*(c + d*Sec[e + f*x])) + (
(4*c - d)*d^4*Tan[e + f*x])/(a^2*c^2*(c - d)^4*(c + d)*f*Sqrt[a + a*Sec[e +
 f*x]]*(c + d*Sec[e + f*x]))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 180

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_)*((e_.) + (f_.)*(x_)
)^(p_)*((g_.) + (h_.)*(x_))^(q_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x
)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f,
 g, h, m, n}, x] && IntegersQ[p, q]
```

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 208

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

Rule 3940

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.)*(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_))^(n_.), x_Symbol] :> Dist[(a^2*Cot[e + f*x])/(f*Sqrt[a + b*Csc[
e + f*x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((a + b*x)^(m - 1/2)*(c + d*
x)^n)/(x*Sqrt[a - b*x]), x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e,
f, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && IntegerQ[m - 1/2]
```

Rubi steps

$$\int \frac{1}{(a+a\sec(e+fx))^{5/2}(c+d\sec(e+fx))^3}\,dx = -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}\,(a+ax)^3(c+dx)^3}\,dx,x,\sec(e+\right.}{f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}}$$

$$= -\frac{\left(a^2\tan(e+fx)\right)\text{Subst}\left(\int\left(\frac{1}{a^3c^3x\sqrt{a-ax}} - \frac{1}{a^3(c-d)^3(1+x)^3\sqrt{a-ax}}\right.\right.}{}$$

$$= -\frac{\tan(e+fx)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a-ax}}\,dx,x,\sec(e+fx)\right)}{ac^3f\sqrt{a-a\sec(e+fx)}\,\sqrt{a+a\sec(e+fx)}} + \frac{((c-4a}{a}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^3f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^3f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^3f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c}$$

$$= -\frac{\tan(e+fx)}{4a^2(c-d)^3f(1+\sec(e+fx))^2\sqrt{a+a\sec(e+fx)}} - \frac{}{2a^2(c}$$

Mathematica [C] time = 43.44, size = 893714, normalized size = 894.61

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + a*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^3),x]
[Out] Result too large to show
```

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/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^3,x, algorithm="fricas"
)
[Out] Timed out
```

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(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^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)
```

```
Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Unable to check sign: (2*pi/x/2
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umes constant sign by intervals (correct if the argument is real):Check [ab
s(cos(f*t_nostep+exp(1)))]Unable to check sign: (2*pi/t_nostep/2)>(-2*pi/t_
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i/x/2)Unable to check sign: (2*pi/x/2)>(-2*pi/x/2)Warning, integration of a
bs or sign assumes constant sign by intervals (correct if the argument is r
eal):Check [abs(t_nostep^2-1)]Evaluation time: 2.49index.cc index_m i_lex_i
s_greater Error: Bad Argument Value
```

maple [B] time = 44.26, size = 556423, normalized size = 556.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^3,x)
```

```
[Out] result too large to display
```

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(1/(a+a*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^3,x, algorithm="maxima"
)
```

```
[Out] Timed out
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x))^3),x)
```

```
[Out] \text{Hanged}
```

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

$$\int \frac{1}{\left(a\left(\sec\left(e+fx\right)+1\right)\right)^{\frac{5}{2}}\left(c+d\sec\left(e+fx\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e))**3,x)
```

```
[Out] Integral(1/((a*(sec(e + f*x) + 1))**(5/2)*(c + d*sec(e + f*x))**3), x)
```

3.184 $\int \sqrt{a + a\sec(e + fx)}\sqrt{c + d\sec(e + fx)}\,dx$

Optimal. Leaf size=123

$$\frac{2\sqrt{a}\sqrt{c}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{f}+\frac{2\sqrt{a}\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{f}$$

```
[Out] 2*arctan(a^(1/2)*c^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))
^(1/2))*a^(1/2)*c^(1/2)/f+2*arctanh(a^(1/2)*d^(1/2)*tan(f*x+e)/(a+a*sec(f*x
+e))^(1/2)/(c+d*sec(f*x+e))^(1/2))*a^(1/2)*d^(1/2)/f
```

Rubi [A] time = 0.34, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {3932, 3934, 203, 3980, 206}

$$\frac{2\sqrt{a}\sqrt{c}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{f}+\frac{2\sqrt{a}\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{a}\sqrt{d}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] (2*Sqrt[a]*Sqrt[c]*ArcTan[(Sqrt[a]*Sqrt[c]*Tan[e + f*x])/(Sqrt[a + a*Sec[e
+ f*x]]*Sqrt[c + d*Sec[e + f*x]])]])/f + (2*Sqrt[a]*Sqrt[d]*ArcTanh[(Sqrt[a]
*Sqrt[d]*Tan[e + f*x])/(Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]])]
)/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 3932

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[c, Int[Sqrt[a + b*Csc[e + f*x]]/Sqrt[c +
d*Csc[e + f*x]], x], x] + Dist[d, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]
])/Sqrt[c + d*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
b*c - a*d, 0]
```

Rule 3934

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[(-2*a)/f, Subst[Int[1/(1 + a*c*x^2), x],
x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]])], x] /;
 FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] &&
NeQ[c^2 - d^2, 0]
```

Rule 3980

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/Sq
rt[csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)], x_Symbol] :> Dist[(-2*b)/f, Subst
```

```
[Int[1/(1 - b*d*x^2), x], x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*Sqrt[c
+ d*Csc[e + f*x]])], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0
] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}\,dx = c\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx + d\int \frac{\sec(e+fx)\sqrt{a+a\sec(e+}}{\sqrt{c+d\sec(e+fx)}}$$

$$= -\frac{(2ac)\,\text{Subst}\left(\int \frac{1}{1+acx^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{f} - \frac{(2}{}$$

$$= \frac{2\sqrt{a}\sqrt{c}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{f} + \frac{2\sqrt{a}\sqrt{d}\tanh^{-1}}{}$$

Mathematica [A] time = 18.42, size = 240, normalized size = 1.95

$$-\frac{2\cot(e+fx)\sqrt{a(\sec(e+fx)+1)}\sqrt{c+d\sec(e+fx)}\left(\sqrt{c^2\sin^2(e+fx)}\sqrt{c-c\cos(e+fx)}\tan^{-1}\left(\frac{\sqrt{c(\cos(e+fx}}{\sqrt{c}}\right.\right.}{f\sqrt{c(\cos(e+fx)+1)}\sqrt{c-c\cos(e+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] (-2*Cot[e + f*x]*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c + d*Sec[e + f*x]]*(-2*Sq
rt[c]*Sqrt[d]*ArcTanh[(Sqrt[c]*Sqrt[d + c*Cos[e + f*x]])/(Sqrt[d]*Sqrt[c -
c*Cos[e + f*x]])]*Sqrt[c*(1 + Cos[e + f*x])]*Sin[(e + f*x)/2]^2 + ArcTan[(S
qrt[c*(1 + Cos[e + f*x])]*Sqrt[d + c*Cos[e + f*x]])/Sqrt[c^2*Sin[e + f*x]^2
]]*Sqrt[c - c*Cos[e + f*x]]*Sqrt[c^2*Sin[e + f*x]^2]))/(f*Sqrt[c*(1 + Cos[e
 + f*x])]*Sqrt[c - c*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])
```

fricas [A] time = 1.47, size = 806, normalized size = 6.55

$$\left[\frac{\sqrt{ad}\log\left(\frac{2\sqrt{ad}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{\frac{c\cos(fx+e)+d}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)+(ac-ad)\cos(fx+e)^2+2ad+(ac+ad)\cos(fx+e)}{\cos(fx+e)^2+\cos(fx+e)}\right)+\sqrt{-ac}\log\left(\frac{2ac}{}\right.}{f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [(sqrt(a*d)*log((2*sqrt(a*d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((
c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c - a*d)*c
os(f*x + e)^2 + 2*a*d + (a*c + a*d)*cos(f*x + e))/(cos(f*x + e)^2 + cos(f*x
 + e))) + sqrt(-a*c)*log((2*a*c*cos(f*x + e)^2 - 2*sqrt(-a*c)*sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x
+ e)*sin(f*x + e) - a*c + a*d + (a*c + a*d)*cos(f*x + e))/(cos(f*x + e) + 1
)))/f, -(2*sqrt(a*c)*arctan(sqrt(a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e
))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(a*c*sin(f*x + e)))
```

```
 - sqrt(a*d)*log((2*sqrt(a*d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(
(c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (a*c - a*d)*
cos(f*x + e)^2 + 2*a*d + (a*c + a*d)*cos(f*x + e))/(cos(f*x + e)^2 + cos(f*
x + e))))/f, -(2*sqrt(-a*d)*arctan(sqrt(-a*d)*sqrt((a*cos(f*x + e) + a)/cos
(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(a*d*sin(f*
x + e))) - sqrt(-a*c)*log((2*a*c*cos(f*x + e)^2 - 2*sqrt(-a*c)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x
 + e)*sin(f*x + e) - a*c + a*d + (a*c + a*d)*cos(f*x + e))/(cos(f*x + e) +
1)))/f, -2*(sqrt(a*c)*arctan(sqrt(a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(a*c*sin(f*x + e))
) + sqrt(-a*d)*arctan(sqrt(-a*d)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sq
rt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(a*d*sin(f*x + e))))/f]
```

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

$$\int \sqrt{a \sec\left(fx+e\right)+a}\,\sqrt{d \sec\left(fx+e\right)+c}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(a*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c), x)
```

maple [B] time = 2.24, size = 1562, normalized size = 12.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^(1/2)*(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] 1/f*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)
*cos(f*x+e)*(-1+cos(f*x+e))*((c-d)^(1/2)*ln(-2*(2^(1/2)*(-d)^(1/2)*(-2*(d+c
*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)-c*s
in(f*x+e)-d*sin(f*x+e)+c-d)/(-1+cos(f*x+e)+sin(f*x+e)))*c^2*d-2*(c-d)^(1/2)
*ln(-2*(2^(1/2)*(-d)^(1/2)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*sin(f
*x+e)-c*cos(f*x+e)+d*cos(f*x+e)-c*sin(f*x+e)-d*sin(f*x+e)+c-d)/(-1+cos(f*x+
e)+sin(f*x+e)))*c*d^2+(c-d)^(1/2)*ln(-2*(2^(1/2)*(-d)^(1/2)*(-2*(d+c*cos(f*
x+e))/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)-c*cos(f*x+e)+d*cos(f*x+e)-c*sin(f*x+
e)-d*sin(f*x+e)+c-d)/(-1+cos(f*x+e)+sin(f*x+e)))*d^3-(c-d)^(1/2)*ln(-2*(2^(
1/2)*(-d)^(1/2)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+c*cos
(f*x+e)-d*cos(f*x+e)-c*sin(f*x+e)-d*sin(f*x+e)-c+d)/(-sin(f*x+e)-1+cos(f*x+
e)))*c^2*d+2*(c-d)^(1/2)*ln(-2*(2^(1/2)*(-d)^(1/2)*(-2*(d+c*cos(f*x+e))/(1+
cos(f*x+e)))^(1/2)*sin(f*x+e)+c*cos(f*x+e)-d*cos(f*x+e)-c*sin(f*x+e)-d*sin(
f*x+e)-c+d)/(-sin(f*x+e)-1+cos(f*x+e)))*c*d^2-(c-d)^(1/2)*ln(-2*(2^(1/2)*(-
d)^(1/2)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*sin(f*x+e)+c*cos(f*x+e)
-d*cos(f*x+e)-c*sin(f*x+e)-d*sin(f*x+e)-c+d)/(-sin(f*x+e)-1+cos(f*x+e)))*d^
3+ln(((-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^(1/2)*sin(f*x+e)-c*c
os(f*x+e)+d*cos(f*x+e)+c-d)/sin(f*x+e)/(c-d)^(1/2))*2^(1/2)*(-d)^(1/2)*c^3-
3*ln(((-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^(1/2)*sin(f*x+e)-c*c
os(f*x+e)+d*cos(f*x+e)+c-d)/sin(f*x+e)/(c-d)^(1/2))*2^(1/2)*(-d)^(1/2)*c^2*
d+3*ln(((-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^(1/2)*sin(f*x+e)-c
*cos(f*x+e)+d*cos(f*x+e)+c-d)/sin(f*x+e)/(c-d)^(1/2))*2^(1/2)*(-d)^(1/2)*c*
d^2-ln(((-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^(1/2)*sin(f*x+e)-c
*cos(f*x+e)+d*cos(f*x+e)+c-d)/sin(f*x+e)/(c-d)^(1/2))*2^(1/2)*(-d)^(1/2)*d^
3-ln(-((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)
))^(1/2)-(c-d)^(1/2))/sin(f*x+e))*2^(1/2)*(-d)^(1/2)*c^3+3*ln(-((c-d)^(1/2)
*cos(f*x+e)-sin(f*x+e)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)-(c-d)^(1/
2))/sin(f*x+e))*2^(1/2)*(-d)^(1/2)*c^2*d-3*ln(-((c-d)^(1/2)*cos(f*x+e)-sin(
f*x+e)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)-(c-d)^(1/2))/sin(f*x+e))*
```

```
2^(1/2)*(-d)^(1/2)*c*d^2+ln(-((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-2*(d+c*co
s(f*x+e))/(1+cos(f*x+e)))^(1/2)-(c-d)^(1/2))/sin(f*x+e))*2^(1/2)*(-d)^(1/2)
*d^3-2*(-(c-d)^4*c)^(1/2)*arctan((-1+cos(f*x+e))/sin(f*x+e)/(-2*(d+c*cos(f*
x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^2*c*2^(1/2)/(-(c-d)^4*c)^(1/2))*(c-d)^(1/
2)*(-d)^(1/2))/sin(f*x+e)^2/(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)/(c-d
)^(1/2)*2^(1/2)/(-d)^(1/2)/(c^2-2*c*d+d^2)
```

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

$$\int \sqrt{a \sec\left(fx+e\right)+a}\sqrt{d \sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)*(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate(sqrt(a*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c), x)
```

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

$$\int \sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2), x)
```

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

$$\int \sqrt{a\left(\sec\left(e+fx\right)+1\right)}\sqrt{c+d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**(1/2)*(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))*sqrt(c + d*sec(e + f*x)), x)
```

3.185 $\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx$

Optimal. Leaf size=61

$$\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{c}f}$$

```
[Out] 2*arctan(a^(1/2)*c^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))
^(1/2))*a^(1/2)/f/c^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {3934, 203}

$$\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{c}f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Sqrt[c]*Tan[e + f*x])/(Sqrt[a + a*Sec[e + f*x]]*
Sqrt[c + d*Sec[e + f*x]])])/(Sqrt[c]*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 3934

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[(-2*a)/f, Subst[Int[1/(1 + a*c*x^2), x],
x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]])], x] /;
 FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] &&
NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx &= -\frac{(2a)\,\text{Subst}\left(\int \frac{1}{1+acx^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{f}\\ &= \frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{c}f}\end{aligned}$$

Mathematica [A] time = 0.22, size = 102, normalized size = 1.67

$$\frac{\sqrt{2}\sec\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\sqrt{c\cos(e+fx)+d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sin\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c\cos(e+fx)+d}}\right)}{\sqrt{c}f\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] (Sqrt[2]*ArcTan[(Sqrt[2]*Sqrt[c]*Sin[(e + f*x)/2])/Sqrt[d + c*Cos[e + f*x]]
]*Sqrt[d + c*Cos[e + f*x]]*Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])])/(Sq
rt[c]*f*Sqrt[c + d*Sec[e + f*x]])
```

fricas [A] time = 0.59, size = 206, normalized size = 3.38

$$\left[\frac{\sqrt{-\frac{a}{c}}\log\left(-\frac{2c\sqrt{-\frac{a}{c}}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{\frac{c\cos(fx+e)+d}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)-2ac\cos(fx+e)^2+ac-ad-(ac+ad)\cos(fx+e)}{\cos(fx+e)+1}\right)}{f}, -\frac{2\sqrt{\frac{a}{c}}\arctan\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [sqrt(-a/c)*log(-(2*c*sqrt(-a/c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sq
rt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) - 2*a*c*cos
(f*x + e)^2 + a*c - a*d - (a*c + a*d)*cos(f*x + e))/(cos(f*x + e) + 1))/f,
-2*sqrt(a/c)*arctan(sqrt(a/c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt(
(c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(a*sin(f*x + e)))/f]
```

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

$$\int \frac{\sqrt{a\sec\left(fx+e\right)+a}}{\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(a*sec(f*x + e) + a)/sqrt(d*sec(f*x + e) + c), x)
```

maple [B] time = 1.96, size = 189, normalized size = 3.10

$$-\frac{2\sqrt{\frac{a(1+\cos(fx+e))}{\cos(fx+e)}}\cos\left(fx+e\right)\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{d+c\cos(fx+e)}{\cos(fx+e)}}\arctan\left(\frac{(-1+\cos(fx+e))(c-d)^2c\sqrt{2}}{\sin(fx+e)\sqrt{-\frac{2(d+c\cos(fx+e))}{1+\cos(fx+e)}}\sqrt{-(c-d)^4c}}\right)\ldots}{f\sin\left(fx+e\right)^2\sqrt{-\frac{2(d+c\cos(fx+e))}{1+\cos(fx+e)}}\left(c^2-2cd+d^2\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x)
```

```
[Out] -2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*cos(f*x+e)*(-1+cos(f*x+e))*((d+c*c
os(f*x+e))/cos(f*x+e))^(1/2)*arctan((-1+cos(f*x+e))/sin(f*x+e)/(-2*(d+c*cos
(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^2*c*2^(1/2)/(-(c-d)^4*c)^(1/2))/sin(f*
x+e)^2/(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*2^(1/2)*(-(c-d)^4*c)^(1/2
)/(c^2-2*c*d+d^2)/c
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-c>0)', see `assume?` for more det
ails)Is d-c zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}{\sqrt{c+d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/sqrt(c + d*sec(e + f*x)), x)
```

3.186 $\int \frac{\sqrt{a+a\sec(e+fx)}}{(c+d\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=111

$$\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{c^{3/2}f}-\frac{2ad\tan(e+fx)}{cf(c+d)\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}$$

```
[Out] 2*arctan(a^(1/2)*c^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))
^(1/2))*a^(1/2)/c^(3/2)/f-2*a*d*tan(f*x+e)/c/(c+d)/f/(a+a*sec(f*x+e))^(1/2)
/(c+d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.36, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {3939, 3934, 203, 3987, 37}

$$\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{c^{3/2}f}-\frac{2ad\tan(e+fx)}{cf(c+d)\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*Sqrt[a]*ArcTan[(Sqrt[a]*Sqrt[c]*Tan[e + f*x])/(Sqrt[a + a*Sec[e + f*x]]*
Sqrt[c + d*Sec[e + f*x]])])/(c^(3/2)*f) - (2*a*d*Tan[e + f*x])/(c*(c + d)*f
*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

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 3934

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[(-2*a)/f, Subst[Int[1/(1 + a*c*x^2), x],
x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]])], x] /;
 FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] &&
NeQ[c^2 - d^2, 0]
```

Rule 3939

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(3/2), x_Symbol] :> Dist[1/c, Int[Sqrt[a + b*Csc[e + f*x]]/Sqrt[
c + d*Csc[e + f*x]], x], x] - Dist[d/c, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e
+ f*x]])/(c + d*Csc[e + f*x])^(3/2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && NeQ[b*c - a*d, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3987

```
Int[(csc[(e_.) + (f_.)*(x_)]*(g_.))^(p_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))^(n_), x_Symbol] :> Dist[(
a^2*g*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e + f*x]]*Sqrt[a - b*Csc[e + f*x]]),
Subst[Int[((g*x)^(p - 1)*(a + b*x)^(m - 1/2)*(c + d*x)^n)/Sqrt[a - b*x], x]
, x, Csc[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, g, m, n, p}, x] && NeQ[b
*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && (EqQ[p, 1] || Int
egerQ[m - 1/2])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sec(e+fx)}}{(c+d\sec(e+fx))^{3/2}}\,dx = \frac{\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx}{c} - \frac{d\int \frac{\sec(e+fx)\sqrt{a+a\sec(e+fx)}}{(c+d\sec(e+fx))^{3/2}}\,dx}{c}$$

$$= -\frac{(2a)\,\text{Subst}\left(\int \frac{1}{1+acx^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{cf} + \frac{\left(a^2 d\tan(e+fx)\right)\text{Subs}}{cf\sqrt{a-a\sec(}}$$

$$= \frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{c^{3/2}f} - \frac{2ad\tan(e+fx)}{c(c+d)f\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(}}$$

Mathematica [A] time = 0.96, size = 135, normalized size = 1.22

$$-\frac{\sec\left(\frac{1}{2}(e+fx)\right)\sqrt{a(\sec(e+fx)+1)}\left(2\sqrt{c}\,d\sin\left(\frac{1}{2}(e+fx)\right)-\sqrt{2}(c+d)^{3/2}\sin^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sin\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)\sqrt{\frac{c\cos(e+fx)\cdot}{c+d}}\right.}{c^{3/2}f(c+d)\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sec[e + f*x]]/(c + d*Sec[e + f*x])^(3/2),x]
```

```
[Out] -((Sec[(e + f*x)/2]*Sqrt[a*(1 + Sec[e + f*x])]*(-(Sqrt[2]*(c + d)^(3/2)*Arc
Sin[(Sqrt[2]*Sqrt[c]*Sin[(e + f*x)/2])/Sqrt[c + d]]*Sqrt[(d + c*Cos[e + f*x
])/(c + d)]) + 2*Sqrt[c]*d*Sin[(e + f*x)/2]))/(c^(3/2)*(c + d)*f*Sqrt[c + d
*Sec[e + f*x]]))
```

fricas [B] time = 0.60, size = 517, normalized size = 4.66

$$\left[-\frac{2d\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{\frac{c\cos(fx+e)+d}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)-\left(\left(c^2+cd\right)\cos(fx+e)^2+cd+d^2+\left(c^2+2cd+d\right.\right.}{\left(c^3+c^2d\right)f\cos(fx+e)^2+\left(c^3+2c^2d\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] [-(2*d*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/co
s(f*x + e))*cos(f*x + e)*sin(f*x + e) - ((c^2 + c*d)*cos(f*x + e)^2 + c*d +
 d^2 + (c^2 + 2*c*d + d^2)*cos(f*x + e))*sqrt(-a/c)*log(-(2*c*sqrt(-a/c)*sq
rt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e
))*cos(f*x + e)*sin(f*x + e) - 2*a*c*cos(f*x + e)^2 + a*c - a*d - (a*c + a*
```

```
d)*cos(f*x + e))/(cos(f*x + e) + 1)))/((c^3 + c^2*d)*f*cos(f*x + e)^2 + (c^
3 + 2*c^2*d + c*d^2)*f*cos(f*x + e) + (c^2*d + c*d^2)*f), -2*(d*sqrt((a*cos
(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*
x + e)*sin(f*x + e) + ((c^2 + c*d)*cos(f*x + e)^2 + c*d + d^2 + (c^2 + 2*c*
d + d^2)*cos(f*x + e))*sqrt(a/c)*arctan(sqrt(a/c)*sqrt((a*cos(f*x + e) + a)
/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(a*sin(
f*x + e))))/((c^3 + c^2*d)*f*cos(f*x + e)^2 + (c^3 + 2*c^2*d + c*d^2)*f*cos
(f*x + e) + (c^2*d + c*d^2)*f)]
```

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

$$\int \frac{\sqrt{a \sec\left(fx+e\right)+a}}{\left(d \sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(a*sec(f*x + e) + a)/(d*sec(f*x + e) + c)^(3/2), x)
```

maple [B] time = 2.05, size = 377, normalized size = 3.40

$$-\frac{\left(\sqrt{2}\,\sqrt{-\left(c-d\right)^{4} c}\;\arctan\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\left(c-d\right)^{2} c\sqrt{2}}{\sin\left(fx+e\right)\sqrt{-\frac{2\left(d+c\cos\left(fx+e\right)\right)}{1+\cos\left(fx+e\right)}}\,\sqrt{-\left(c-d\right)^{4} c}}\right)\sqrt{-\frac{2\left(d+c\cos\left(fx+e\right)\right)}{1+\cos\left(fx+e\right)}}\;c\sin\left(fx+e\right)+\sqrt{2}\,\sqrt{-\left(c-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/f*(2^(1/2)*(-(c-d)^4*c)^(1/2)*arctan((-1+cos(f*x+e))/sin(f*x+e)/(-2*(d+c
*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^2*c*2^(1/2)/(-(c-d)^4*c)^(1/2))*(-
2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*c*sin(f*x+e)+2^(1/2)*(-(c-d)^4*c)^
(1/2)*arctan((-1+cos(f*x+e))/sin(f*x+e)/(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e))
)^(1/2)*(c-d)^2*c*2^(1/2)/(-(c-d)^4*c)^(1/2))*(-2*(d+c*cos(f*x+e))/(1+cos(f
*x+e)))^(1/2)*d*sin(f*x+e)-2*c^3*d*cos(f*x+e)+4*cos(f*x+e)*c^2*d^2-2*cos(f*
x+e)*c*d^3+2*c^3*d-4*c^2*d^2+2*c*d^3)*cos(f*x+e)*(a*(1+cos(f*x+e))/cos(f*x+
e))^(1/2)*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)/(d+c*cos(f*x+e))/sin(f*x+e)/(
c+d)/c^2/(c^2-2*c*d+d^2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-c>0)', see `assume?` for more det
ails)Is d-c zero or nonzero?
```

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

$$\int \frac{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}{{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + a/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\sqrt{a \left(\sec \left(e + f x\right) + 1\right)}}{\left(c + d \sec \left(e + f x\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral(sqrt(a*(sec(e + f*x) + 1))/(c + d*sec(e + f*x))**(3/2), x)
```

3.187 $\int \frac{\sqrt{c+d\sec(e+fx)}}{\sqrt{a+a\sec(e+fx)}}\,dx$

Optimal. Leaf size=141

$$\frac{2\sqrt{c}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{c}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\,\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\,f}-\frac{\sqrt{2}\,\sqrt{c-d}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{c-d}\,\tan(e+fx)}{\sqrt{2}\,\sqrt{a\sec(e+fx)+a}\,\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\,f}$$

```
[Out] 2*arctan(a^(1/2)*c^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))
^(1/2))*c^(1/2)/f/a^(1/2)-arctan(1/2*a^(1/2)*(c-d)^(1/2)*tan(f*x+e)*2^(1/2)
/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2))*2^(1/2)*(c-d)^(1/2)/f/a^(1/
2)
```

Rubi [A] time = 0.37, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3935, 3934, 203, 3983}

$$\frac{2\sqrt{c}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{c}\,\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\,\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\,f}-\frac{\sqrt{2}\,\sqrt{c-d}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{c-d}\,\tan(e+fx)}{\sqrt{2}\,\sqrt{a\sec(e+fx)+a}\,\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\,f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*Sec[e + f*x]]/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*Sqrt[c]*ArcTan[(Sqrt[a]*Sqrt[c]*Tan[e + f*x])/(Sqrt[a + a*Sec[e + f*x]]*
Sqrt[c + d*Sec[e + f*x]])])/(Sqrt[a]*f) - (Sqrt[2]*Sqrt[c - d]*ArcTan[(Sqrt
[a]*Sqrt[c - d]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*
Sec[e + f*x]])])/(Sqrt[a]*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 3934

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[(-2*a)/f, Subst[Int[1/(1 + a*c*x^2), x],
x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]])], x] /;
 FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] &&
NeQ[c^2 - d^2, 0]
```

Rule 3935

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[a/c, Int[Sqrt[c + d*Csc[e + f*x]]/Sqrt[a
+ b*Csc[e + f*x]], x], x] + Dist[(b*c - a*d)/c, Int[Csc[e + f*x]/(Sqrt[a +
b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && EqQ[c^2 - d^2, 0]
```

Rule 3983

```
Int[csc[(e_.) + (f_.)*(x_)]/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqr
t[csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)]), x_Symbol] :> Dist[(-2*a)/(b*f), S
ubst[Int[1/(2 + (a*c - b*d)*x^2), x], x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f
*x]]*Sqrt[c + d*Csc[e + f*x]])], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
```

```
b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{\sqrt{c+d\sec(e+fx)}}{\sqrt{a+a\sec(e+fx)}}\,dx = \frac{c\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx}{a} + (-c+d)\int \frac{\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c+d\sec(e+fx)}}\,dx$$

$$= -\frac{(2c)\,\text{Subst}\left(\int \frac{1}{1+acx^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c+d\sec(e+fx)}}\right)}{f} + \frac{(2(c-d))\,\text{Subst}\left(\int \frac{1}{2+(ac-}\right.}{}$$

$$= \frac{2\sqrt{c}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{c}\,\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\,\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\,f} - \frac{\sqrt{2}\,\sqrt{c-d}\,\tan^{-1}\left(\frac{\sqrt{a}\,\sqrt{c-d}\,\tan(e+fx)}{\sqrt{2}\,\sqrt{a+a\sec(e+fx)}\,\sqrt{c+d\sec(\right.}}{\sqrt{a}\,f}$$

Mathematica [A] time = 14.62, size = 184, normalized size = 1.30

$$\frac{2\cos\left(\frac{1}{2}(e+fx)\right)\sqrt{c+d\sec(e+fx)}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{c+d}\,\sin^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sin\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)\sqrt{\frac{c\cos(e+fx)+d}{c+d}}}{\sqrt{c\cos(e+fx)+d}} + \sqrt{d-c}\,\tanh^{-1}\left(\frac{\sqrt{d-c}\,\sin\left(\frac{1}{2}(e+f\right.}{\sqrt{c\cos(e+fx)+d}}\right.\right.}{f\sqrt{a(\sec(e+fx)+1)}\,\sqrt{c\cos(e+fx)+d}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*Sec[e + f*x]]/Sqrt[a + a*Sec[e + f*x]],x]
```

```
[Out] (2*Cos[(e + f*x)/2]*(Sqrt[-c + d]*ArcTanh[(Sqrt[-c + d]*Sin[(e + f*x)/2])/S
qrt[d + c*Cos[e + f*x]]] + (Sqrt[2]*Sqrt[c]*Sqrt[c + d]*ArcSin[(Sqrt[2]*Sqr
t[c]*Sin[(e + f*x)/2])/Sqrt[c + d]]*Sqrt[(d + c*Cos[e + f*x])/(c + d)])/Sqr
t[d + c*Cos[e + f*x]])*Sqrt[c + d*Sec[e + f*x]])/(f*Sqrt[d + c*Cos[e + f*x]
]*Sqrt[a*(1 + Sec[e + f*x])])
```

fricas [A] time = 1.00, size = 883, normalized size = 6.26

$$\left[\frac{\sqrt{2}\sqrt{-\frac{c-d}{a}}\log\left(\frac{2\sqrt{2}\sqrt{-\frac{c-d}{a}}\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{\frac{c\cos(fx+e)+d}{\cos(fx+e)}}\cos(fx+e)\sin(fx+e)+(3c-d)\cos(fx+e)^2+2(c+d)\cos(fx+e)-c+3d}{\cos(fx+e)^2+2\cos(fx+e)+1}\right)+2\sqrt{-\frac{c}{a}}\right.}{2f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/2*(sqrt(2)*sqrt(-(c - d)/a)*log((2*sqrt(2)*sqrt(-(c - d)/a)*sqrt((a*cos(
f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x
 + e)*sin(f*x + e) + (3*c - d)*cos(f*x + e)^2 + 2*(c + d)*cos(f*x + e) - c
+ 3*d)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) + 2*sqrt(-c/a)*log(-(2*sqrt(-
c/a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(
f*x + e))*cos(f*x + e)*sin(f*x + e) - 2*c*cos(f*x + e)^2 - (c + d)*cos(f*x
+ e) + c - d)/(cos(f*x + e) + 1)))/f, 1/2*(sqrt(2)*sqrt(-(c - d)/a)*log((2*
sqrt(2)*sqrt(-(c - d)/a)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*co
```

```
s(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)*sin(f*x + e) + (3*c - d)*cos(f*x
 + e)^2 + 2*(c + d)*cos(f*x + e) - c + 3*d)/(cos(f*x + e)^2 + 2*cos(f*x + e
) + 1)) - 4*sqrt(c/a)*arctan(sqrt(c/a)*sqrt((a*cos(f*x + e) + a)/cos(f*x +
e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(c*sin(f*x + e))))
/f, -(sqrt(2)*sqrt((c - d)/a)*arctan(-sqrt(2)*sqrt((c - d)/a)*sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x
+ e)/((c - d)*sin(f*x + e))) - sqrt(-c/a)*log(-(2*sqrt(-c/a)*sqrt((a*cos(f*
x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x +
 e)*sin(f*x + e) - 2*c*cos(f*x + e)^2 - (c + d)*cos(f*x + e) + c - d)/(cos(
f*x + e) + 1)))/f, -(sqrt(2)*sqrt((c - d)/a)*arctan(-sqrt(2)*sqrt((c - d)/a
)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x
 + e))*cos(f*x + e)/((c - d)*sin(f*x + e))) + 2*sqrt(c/a)*arctan(sqrt(c/a)*
sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x +
 e))*cos(f*x + e)/(c*sin(f*x + e))))/f]
```

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

$$\int \frac{\sqrt{d\sec\left(fx+e\right)+c}}{\sqrt{a\sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(d*sec(f*x + e) + c)/sqrt(a*sec(f*x + e) + a), x)
```

maple [B] time = 1.88, size = 494, normalized size = 3.50

$$-\frac{2\sqrt{\frac{d+c\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\,\cos\left(fx+e\right)\left(-1+\cos\left(fx+e\right)\right)\left(\ln\left(-\frac{\sqrt{c-d}\,\cos\left(fx+e\right)-\sin\left(fx+e\right)\sqrt{-\frac{2\left(d+c\cos\left(fx+e\right)\right)}{1+\cos\left(fx+e\right)}}}{\sin\left(fx+e\right)}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x)
```

```
[Out] -2/f*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2
)*cos(f*x+e)*(-1+cos(f*x+e))*(ln(-((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-2*(d
+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)-(c-d)^(1/2))/sin(f*x+e))*c^3-3*ln(-((c
-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)-
(c-d)^(1/2))/sin(f*x+e))*c^2*d+3*ln(-((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-2
*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)-(c-d)^(1/2))/sin(f*x+e))*c*d^2-ln(-
((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/
2)-(c-d)^(1/2))/sin(f*x+e))*d^3+2^(1/2)*(-(c-d)^4*c)^(1/2)*arctan((-1+cos(f
*x+e))/sin(f*x+e)/(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^2*c*2^(1
/2)/(-(c-d)^4*c)^(1/2))*(c-d)^(1/2))/sin(f*x+e)^2/(-2*(d+c*cos(f*x+e))/(1+c
os(f*x+e)))^(1/2)/a/(c-d)^(1/2)/(c^2-2*c*d+d^2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+a*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-c>0)', see `assume?` for more det
ails)Is d-c positive, negative or zero?
```

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

$$\int \frac{\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c + d/cos(e + f*x))^(1/2)/(a + a/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{c+d\sec\left(e+fx\right)}}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**(1/2)/(a+a*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(c + d*sec(e + f*x))/sqrt(a*(sec(e + f*x) + 1)), x)
```

3.188 $\int \frac{1}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\,dx$

Optimal. Leaf size=141

$$\frac{2\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\sqrt{c}f}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c-d}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}f\sqrt{c-d}}$$

```
[Out] 2*arctan(a^(1/2)*c^(1/2)*tan(f*x+e)/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))
^(1/2))/f/a^(1/2)/c^(1/2)-arctan(1/2*a^(1/2)*(c-d)^(1/2)*tan(f*x+e)*2^(1/2)
/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2))*2^(1/2)/f/a^(1/2)/(c-d)^(1/
2)
```

Rubi [A] time = 0.34, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {3938, 3934, 203, 3983}

$$\frac{2\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\sqrt{c}f}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c-d}\tan(e+fx)}{\sqrt{2}\sqrt{a\sec(e+fx)+a}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}f\sqrt{c-d}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]),x]
```

```
[Out] (2*ArcTan[(Sqrt[a]*Sqrt[c]*Tan[e + f*x])/(Sqrt[a + a*Sec[e + f*x]]*Sqrt[c +
 d*Sec[e + f*x]])])/(Sqrt[a]*Sqrt[c]*f) - (Sqrt[2]*ArcTan[(Sqrt[a]*Sqrt[c -
 d]*Tan[e + f*x])/(Sqrt[2]*Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]
])])/(Sqrt[a]*Sqrt[c - d]*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 3934

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[(-2*a)/f, Subst[Int[1/(1 + a*c*x^2), x],
x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]])], x] /;
 FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] &&
NeQ[c^2 - d^2, 0]
```

Rule 3938

```
Int[1/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqrt[csc[(e_.) + (f_.)*(x
_)]*(d_.) + (c_)]), x_Symbol] :> Dist[1/a, Int[Sqrt[a + b*Csc[e + f*x]]/Sqr
t[c + d*Csc[e + f*x]], x], x] - Dist[b/a, Int[Csc[e + f*x]/(Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && NeQ[b*c - a*d, 0]
```

Rule 3983

```
Int[csc[(e_.) + (f_.)*(x_)]/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqr
t[csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)]), x_Symbol] :> Dist[(-2*a)/(b*f), S
ubst[Int[1/(2 + (a*c - b*d)*x^2), x], x, Cot[e + f*x]/(Sqrt[a + b*Csc[e + f
*x]]*Sqrt[c + d*Csc[e + f*x]])], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
```

```
b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\,dx = \frac{\int \frac{\sqrt{a+a\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx}{a} - \int \frac{\sec(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\,d$$
$$= -\frac{2\,\text{Subst}\left(\int \frac{1}{1+acx^2}\,dx, x, -\frac{\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{f} + \frac{2\,\text{Subst}}{}$$
$$= \frac{2\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c}\tan(e+fx)}{\sqrt{a+a\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\right)}{\sqrt{a}\sqrt{c}f} - \frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{a}\sqrt{c-d}\,\text{t}}{\sqrt{2}\sqrt{a+a\sec(e+fx}}\right.}{\sqrt{a}\sqrt{c-d}\,f}$$

Mathematica [A] time = 0.35, size = 171, normalized size = 1.21

$$\frac{2\cos\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{c\cos(e+fx)+d}\left(\sqrt{2}\sqrt{c-d}\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sin\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c\cos(e+fx)+d}}\right)-\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c-d}\sin\left(\frac{1}{2}(e+f\right.}{\sqrt{c\cos(e+fx)+a}}\right.\right.}{\sqrt{c}f\sqrt{c-d}\sqrt{a(\sec(e+fx)+1)}\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a + a*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]),x]
```

```
[Out] (2*(Sqrt[2]*Sqrt[c - d]*ArcTan[(Sqrt[2]*Sqrt[c]*Sin[(e + f*x)/2])/Sqrt[d +
c*Cos[e + f*x]]] - Sqrt[c]*ArcTan[(Sqrt[c - d]*Sin[(e + f*x)/2])/Sqrt[d + c
*Cos[e + f*x]]])*Cos[(e + f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*Sec[e + f*x])/(S
qrt[c]*Sqrt[c - d]*f*Sqrt[a*(1 + Sec[e + f*x])]*Sqrt[c + d*Sec[e + f*x]])
```

fricas [A] time = 1.69, size = 913, normalized size = 6.48

$$\left[\frac{\sqrt{2}\,ac\sqrt{-\frac{1}{ac-ad}}\log\left(\frac{2\sqrt{2}(c-d)\sqrt{\frac{a\cos(fx+e)+a}{\cos(fx+e)}}\sqrt{\frac{c\cos(fx+e)+d}{\cos(fx+e)}}\sqrt{-\frac{1}{ac-ad}}\cos(fx+e)\sin(fx+e)+(3c-d)\cos(fx+e)^2+2(c+d)\cos(fx+e)-c+3d}{\cos(fx+e)^2+2\cos(fx+e)+1}\right.}{2acf}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] [1/2*(sqrt(2)*a*c*sqrt(-1/(a*c - a*d))*log((2*sqrt(2)*(c - d)*sqrt((a*cos(f
*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*sqrt(-1/
(a*c - a*d))*cos(f*x + e)*sin(f*x + e) + (3*c - d)*cos(f*x + e)^2 + 2*(c +
d)*cos(f*x + e) - c + 3*d)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) - 2*sqrt(
-a*c)*log((2*a*c*cos(f*x + e)^2 + 2*sqrt(-a*c)*sqrt((a*cos(f*x + e) + a)/co
s(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)*sin(f*x +
e) - a*c + a*d + (a*c + a*d)*cos(f*x + e))/(cos(f*x + e) + 1)))/(a*c*f), 1/
```

```
2*(sqrt(2)*a*c*sqrt(-1/(a*c - a*d))*log((2*sqrt(2)*(c - d)*sqrt((a*cos(f*x
+ e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*sqrt(-1/(a*
c - a*d))*cos(f*x + e)*sin(f*x + e) + (3*c - d)*cos(f*x + e)^2 + 2*(c + d)*
cos(f*x + e) - c + 3*d)/(cos(f*x + e)^2 + 2*cos(f*x + e) + 1)) - 4*sqrt(a*c
)*arctan(sqrt(a*c)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x
+ e) + d)/cos(f*x + e))*cos(f*x + e)/(a*c*sin(f*x + e))))/(a*c*f), (sqrt(2)
*a*c*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x
 + e) + d)/cos(f*x + e))*cos(f*x + e)/(sqrt(a*c - a*d)*sin(f*x + e)))/sqrt(
a*c - a*d) - sqrt(-a*c)*log((2*a*c*cos(f*x + e)^2 + 2*sqrt(-a*c)*sqrt((a*co
s(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f
*x + e)*sin(f*x + e) - a*c + a*d + (a*c + a*d)*cos(f*x + e))/(cos(f*x + e)
+ 1)))/(a*c*f), (sqrt(2)*a*c*arctan(sqrt(2)*sqrt((a*cos(f*x + e) + a)/cos(f
*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(f*x + e)/(sqrt(a*c - a
*d)*sin(f*x + e)))/sqrt(a*c - a*d) - 2*sqrt(a*c)*arctan(sqrt(a*c)*sqrt((a*c
os(f*x + e) + a)/cos(f*x + e))*sqrt((c*cos(f*x + e) + d)/cos(f*x + e))*cos(
f*x + e)/(a*c*sin(f*x + e))))/(a*c*f)]
```

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

$$\int \frac{1}{\sqrt{a\sec\left(fx+e\right)+a}\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[Out] integrate(1/(sqrt(a*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c)), x)
```

maple [B] time = 2.13, size = 424, normalized size = 3.01

$$-\frac{2\sqrt{\frac{a\left(1+\cos\left(fx+e\right)\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{d+c\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\cos\left(fx+e\right)\left(-1+\cos\left(fx+e\right)\right)\left(\sqrt{2}\sqrt{-\left(c-d\right)^{4}c}\arctan\left(\frac{\left(-1+\cos\left(fx\right.\right.}{\sin\left(fx+e\right)\sqrt{-\frac{2\left(d+c\right.}{1+c}}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x)
```

```
[Out] -2/f*(a*(1+cos(f*x+e))/cos(f*x+e))^(1/2)*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2
)*cos(f*x+e)*(-1+cos(f*x+e))*(2^(1/2)*(-(c-d)^4*c)^(1/2)*arctan((-1+cos(f*x
+e))/sin(f*x+e)/(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)*(c-d)^2*c*2^(1/2
)/(-(c-d)^4*c)^(1/2))*(c-d)^(1/2)+ln(-((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-
2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)-(c-d)^(1/2))/sin(f*x+e))*c^3-2*ln(
-((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1
/2)-(c-d)^(1/2))/sin(f*x+e))*c^2*d+ln(-((c-d)^(1/2)*cos(f*x+e)-sin(f*x+e)*(
-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)-(c-d)^(1/2))/sin(f*x+e))*c*d^2)/s
in(f*x+e)^2/(-2*(d+c*cos(f*x+e))/(1+cos(f*x+e)))^(1/2)/a/(c-d)^(1/2)/(c^2-2
*c*d+d^2)/c
```

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

$$\int \frac{1}{\sqrt{a\sec\left(fx+e\right)+a}\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] integrate(1/(sqrt(a*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c)), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{a}{\cos\left(e+f\,x\right)}}\,\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2)),x)
```

```
[Out] int(1/((a + a/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2)), x)
```

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

$$\int \frac{1}{\sqrt{a\left(\sec\left(e+fx\right)+1\right)}\,\sqrt{c+d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+a*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a*(sec(e + f*x) + 1))*sqrt(c + d*sec(e + f*x))), x)
```

3.189 $\int \frac{a+b\sec(e+fx)}{c+d\sec(e+fx)}\,dx$

Optimal. Leaf size=67

$$\frac{2(bc-ad)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{cf\sqrt{c-d}\,\sqrt{c+d}}+\frac{ax}{c}$$

```
[Out] a*x/c+2*(-a*d+b*c)*arctanh((c-d)^(1/2)*tan(1/2*e+1/2*f*x)/(c+d)^(1/2))/c/f/
(c-d)^(1/2)/(c+d)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {3919, 3831, 2659, 208}

$$\frac{2(bc-ad)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{cf\sqrt{c-d}\,\sqrt{c+d}}+\frac{ax}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])/(c + d*Sec[e + f*x]),x]
```

```
[Out] (a*x)/c + (2*(b*c - a*d)*ArcTanh[(Sqrt[c - d]*Tan[(e + f*x)/2])/Sqrt[c + d]
])/(c*Sqrt[c - d]*Sqrt[c + d]*f)
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 3831

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> Dist[1/b, Int[1/(1 + (a*Sin[e + f*x])/b), x], x] /; FreeQ[{a, b, e, f
}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rubi steps

$$\int \frac{a+b\sec(e+fx)}{c+d\sec(e+fx)}\,dx = \frac{ax}{c} - \frac{(-bc+ad)\int \frac{\sec(e+fx)}{c+d\sec(e+fx)}\,dx}{c}$$
$$= \frac{ax}{c} - \frac{(-bc+ad)\int \frac{1}{1+\frac{c\cos(e+fx)}{d}}\,dx}{cd}$$
$$= \frac{ax}{c} + \frac{(2(bc-ad))\,\text{Subst}\left(\int \frac{1}{1+\frac{c}{d}+\left(1-\frac{c}{d}\right)x^2}\,dx, x, \tan\left(\frac{1}{2}(e+fx)\right)\right)}{cdf}$$
$$= \frac{ax}{c} + \frac{2(bc-ad)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c\sqrt{c-d}\,\sqrt{c+d}\,f}$$

Mathematica [**A**] time = 0.17, size = 68, normalized size = 1.01

$$\frac{\frac{2(ad-bc)\tanh^{-1}\left(\frac{(d-c)\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c^2-d^2}}\right)}{\sqrt{c^2-d^2}} + a(e+fx)}{cf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])/(c + d*Sec[e + f*x]),x]
```

```
[Out] (a*(e + f*x) + (2*(-(b*c) + a*d)*ArcTanh[((-c + d)*Tan[(e + f*x)/2])/Sqrt[c
^2 - d^2]])/Sqrt[c^2 - d^2])/(c*f)
```

fricas [**A**] time = 0.48, size = 250, normalized size = 3.73

$$\left[\frac{2\left(ac^2-ad^2\right)fx-(bc-ad)\sqrt{c^2-d^2}\,\log\left(\frac{2\,cd\cos\left(fx+e\right)-\left(c^2-2\,d^2\right)\cos\left(fx+e\right)^2-2\,\sqrt{c^2-d^2}\left(d\cos\left(fx+e\right)+c\right)\sin\left(fx+e\right)+2\,c^2-d^2}{c^2\cos\left(fx+e\right)^2+2\,cd\cos\left(fx+e\right)+d^2}\right)}{2\left(c^3-cd^2\right)f}, \frac{(ac\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(a*c^2 - a*d^2)*f*x - (b*c - a*d)*sqrt(c^2 - d^2)*log((2*c*d*cos(f*
x + e) - (c^2 - 2*d^2)*cos(f*x + e)^2 - 2*sqrt(c^2 - d^2)*(d*cos(f*x + e) +
 c)*sin(f*x + e) + 2*c^2 - d^2)/(c^2*cos(f*x + e)^2 + 2*c*d*cos(f*x + e) +
d^2)))/((c^3 - c*d^2)*f), ((a*c^2 - a*d^2)*f*x + (b*c - a*d)*sqrt(-c^2 + d^
2)*arctan(-sqrt(-c^2 + d^2)*(d*cos(f*x + e) + c)/((c^2 - d^2)*sin(f*x + e))
))/((c^3 - c*d^2)*f)]
```

giac [**B**] time = 0.28, size = 278, normalized size = 4.15

$$\frac{\frac{\left(\sqrt{-c^2+d^2}\,a(c-2\,d)|-c+d|+\sqrt{-c^2+d^2}\,bc|-c+d|-\sqrt{-c^2+d^2}\,a|c||-c+d|+\sqrt{-c^2+d^2}\,b|c||-c+d|\right)\left(\pi\left\lfloor\frac{fx+e}{2\pi}+\frac{1}{2}\right\rfloor+\arctan\left(\frac{\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}{\sqrt{-\frac{d+\sqrt{(c+d)(c-d)+d^2}}{c-d}}}\right)\right)}{\left(c^2-2\,cd+d^2\right)c^2+\left(c^2d-2\,cd^2+d^3\right)|c|} + \frac{(ac+bc-2\,a}{}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] ((sqrt(-c^2 + d^2)*a*(c - 2*d)*abs(-c + d) + sqrt(-c^2 + d^2)*b*c*abs(-c +
d) - sqrt(-c^2 + d^2)*a*abs(c)*abs(-c + d) + sqrt(-c^2 + d^2)*b*abs(c)*abs(
-c + d))*(pi*floor(1/2*(f*x + e)/pi + 1/2) + arctan(tan(1/2*f*x + 1/2*e)/sq
rt(-(d + sqrt((c + d)*(c - d) + d^2))/(c - d))))/((c^2 - 2*c*d + d^2)*c^2 +
 (c^2*d - 2*c*d^2 + d^3)*abs(c)) + (a*c + b*c - 2*a*d + a*abs(c) - b*abs(c)
)*(pi*floor(1/2*(f*x + e)/pi + 1/2) + arctan(tan(1/2*f*x + 1/2*e)/sqrt(-(d
- sqrt((c + d)*(c - d) + d^2))/(c - d))))/(c^2 - d*abs(c)))/f
```

maple [A] time = 0.74, size = 113, normalized size = 1.69

$$-\frac{2\,\mathrm{arctanh}\left(\frac{\tan\left(\frac{e}{2}+\frac{fx}{2}\right)(c-d)}{\sqrt{(c+d)(c-d)}}\right)da}{fc\sqrt{(c+d)\,(c-d)}}+\frac{2\,\mathrm{arctanh}\left(\frac{\tan\left(\frac{e}{2}+\frac{fx}{2}\right)(c-d)}{\sqrt{(c+d)(c-d)}}\right)b}{f\sqrt{(c+d)\,(c-d)}}+\frac{2a\arctan\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)\right)}{fc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))/(c+d*sec(f*x+e)),x)
```

```
[Out] -2/f/c/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(
1/2))*d*a+2/f/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(
c-d))^(1/2))*b+2/f*a/c*arctan(tan(1/2*e+1/2*f*x))
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [B] time = 2.68, size = 573, normalized size = 8.55

$$\frac{b\,c^2\,\ln\left(\frac{c\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)-d\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)+\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,\sqrt{c^2-d^2}}{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}\right)}{f\,{\left(c^2-d^2\right)}^{3/2}}-\frac{b\,d^2\,\ln\left(\frac{c\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)-d\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)+\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)\,\sqrt{c^2-d^2}}{\cos\left(\frac{e}{2}+\frac{f\,x}{2}\right)}\right)}{f\,{\left(c^2-d^2\right)}^{3/2}}+\frac{2\,a\,c\,\mathrm{atan}}{f\,(c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))/(c + d/cos(e + f*x)),x)
```

```
[Out] (b*c^2*log((c*sin(e/2 + (f*x)/2) - d*sin(e/2 + (f*x)/2) + cos(e/2 + (f*x)/2
)*(c^2 - d^2)^(1/2))/cos(e/2 + (f*x)/2)))/(f*(c^2 - d^2)^(3/2)) - (b*d^2*lo
g((c*sin(e/2 + (f*x)/2) - d*sin(e/2 + (f*x)/2) + cos(e/2 + (f*x)/2)*(c^2 -
d^2)^(1/2))/cos(e/2 + (f*x)/2)))/(f*(c^2 - d^2)^(3/2)) + (2*a*c*atan(sin(e/
2 + (f*x)/2)/cos(e/2 + (f*x)/2)))/(f*(c^2 - d^2)) - (b*log((c*cos(e/2 + (f*
x)/2) + d*cos(e/2 + (f*x)/2) - sin(e/2 + (f*x)/2)*(c^2 - d^2)^(1/2))/cos(e/
2 + (f*x)/2))*((c + d)*(c - d))^(1/2))/(f*(c^2 - d^2)) - (a*c*d*log((c*sin(
e/2 + (f*x)/2) - d*sin(e/2 + (f*x)/2) + cos(e/2 + (f*x)/2)*(c^2 - d^2)^(1/2
))/cos(e/2 + (f*x)/2)))/(f*(c^2 - d^2)^(3/2)) - (2*a*d^2*atan(sin(e/2 + (f*
x)/2)/cos(e/2 + (f*x)/2)))/(c*f*(c^2 - d^2)) + (a*d^3*log((c*sin(e/2 + (f*x
)/2) - d*sin(e/2 + (f*x)/2) + cos(e/2 + (f*x)/2)*(c^2 - d^2)^(1/2))/cos(e/2
 + (f*x)/2)))/(c*f*(c^2 - d^2)^(3/2)) + (a*d*log((c*cos(e/2 + (f*x)/2) + d*
cos(e/2 + (f*x)/2) - sin(e/2 + (f*x)/2)*(c^2 - d^2)^(1/2))/cos(e/2 + (f*x)/
2))*((c + d)*(c - d))^(1/2))/(c*f*(c^2 - d^2))
```

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

$$\int \frac{a + b \sec\left(e + fx\right)}{c + d \sec\left(e + fx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e)),x)
```

```
[Out] Integral((a + b*sec(e + f*x))/(c + d*sec(e + f*x)), x)
```

3.190 $\int \frac{a+b\sec(e+fx)}{(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=123

$$-\frac{d(bc-ad)\tan(e+fx)}{cf\left(c^2-d^2\right)(c+d\sec(e+fx))}+\frac{2\left(-2ac^2d+ad^3+bc^3\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^2f(c-d)^{3/2}(c+d)^{3/2}}+\frac{ax}{c^2}$$

```
[Out] a*x/c^2+2*(-2*a*c^2*d+a*d^3+b*c^3)*arctanh((c-d)^(1/2)*tan(1/2*e+1/2*f*x)/(
c+d)^(1/2))/c^2/(c-d)^(3/2)/(c+d)^(3/2)/f-d*(-a*d+b*c)*tan(f*x+e)/c/(c^2-d^
2)/f/(c+d*sec(f*x+e))
```

Rubi [A] time = 0.25, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {3923, 3919, 3831, 2659, 208}

$$\frac{2\left(-2ac^2d+ad^3+bc^3\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^2f(c-d)^{3/2}(c+d)^{3/2}}-\frac{d(bc-ad)\tan(e+fx)}{cf\left(c^2-d^2\right)(c+d\sec(e+fx))}+\frac{ax}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (a*x)/c^2 + (2*(b*c^3 - 2*a*c^2*d + a*d^3)*ArcTanh[(Sqrt[c - d]*Tan[(e + f*
x)/2])/Sqrt[c + d]])/(c^2*(c - d)^(3/2)*(c + d)^(3/2)*f) - (d*(b*c - a*d)*T
an[e + f*x])/(c*(c^2 - d^2)*f*(c + d*Sec[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 3831

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> Dist[1/b, Int[1/(1 + (a*Sin[e + f*x])/b), x], x] /; FreeQ[{a, b, e, f
}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3923

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> Simp[(b*(b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f
*x])^(m + 1))/(a*f*(m + 1)*(a^2 - b^2)), x] + Dist[1/(a*(m + 1)*(a^2 - b^2)
```

```
), Int[(a + b*Csc[e + f*x])^(m + 1)*Simp[c*(a^2 - b^2)*(m + 1) - (a*(b*c -
a*d)*(m + 1))*Csc[e + f*x] + b*(b*c - a*d)*(m + 2)*Csc[e + f*x]^2, x], x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && Ne
Q[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rubi steps

$$\int \frac{a+b\sec(e+fx)}{(c+d\sec(e+fx))^2}\,dx = -\frac{d(bc-ad)\tan(e+fx)}{c\left(c^2-d^2\right)f(c+d\sec(e+fx))} - \frac{\int \frac{-a\left(c^2-d^2\right)-c(bc-ad)\sec(e+fx)}{c+d\sec(e+fx)}\,dx}{c\left(c^2-d^2\right)}$$

$$= \frac{ax}{c^2} - \frac{d(bc-ad)\tan(e+fx)}{c\left(c^2-d^2\right)f(c+d\sec(e+fx))} + \frac{\left(c^2(bc-ad)-ad\left(c^2-d^2\right)\right)\int \frac{\sec(e+fx)}{c+d\sec(e+fx)}\,dx}{c^2\left(c^2-d^2\right)}$$

$$= \frac{ax}{c^2} - \frac{d(bc-ad)\tan(e+fx)}{c\left(c^2-d^2\right)f(c+d\sec(e+fx))} + \frac{\left(c^2(bc-ad)-ad\left(c^2-d^2\right)\right)\int \frac{1}{1+\frac{c\cos(e+fx)}{d}}\,dx}{c^2d\left(c^2-d^2\right)}$$

$$= \frac{ax}{c^2} - \frac{d(bc-ad)\tan(e+fx)}{c\left(c^2-d^2\right)f(c+d\sec(e+fx))} + \frac{\left(2\left(c^2(bc-ad)-ad\left(c^2-d^2\right)\right)\right)\operatorname{Subst}\left(\int \frac{}{1+\frac{c}{d}}\ldots\right.}{c^2d\left(c^2-d^2\right)\ldots}$$

$$= \frac{ax}{c^2} + \frac{2\left(bc^3-2ac^2d+ad^3\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^2(c-d)^{3/2}(c+d)^{3/2}f} - \frac{d(bc-ad)\tan(e+fx)}{c\left(c^2-d^2\right)f(c+d\sec(e+f\ldots}$$

Mathematica [A] time = 0.66, size = 155, normalized size = 1.26

$$\frac{\frac{-cd(bc-ad)\sin(e+fx)+ad\left(c^2-d^2\right)(e+fx)+ac\left(c^2-d^2\right)(e+fx)\cos(e+fx)}{c\cos(e+fx)+d} - \frac{2\left(ad\left(d^2-2c^2\right)+bc^3\right)\tanh^{-1}\left(\frac{(d-c)\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c^2-d^2}}\right)}{\sqrt{c^2-d^2}}}{c^2f(c-d)(c+d)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] ((-2*(b*c^3 + a*d*(-2*c^2 + d^2))*ArcTanh[((-c + d)*Tan[(e + f*x)/2])/Sqrt[
c^2 - d^2]])/Sqrt[c^2 - d^2] + (a*d*(c^2 - d^2)*(e + f*x) + a*c*(c^2 - d^2)
*(e + f*x)*Cos[e + f*x] - c*d*(b*c - a*d)*Sin[e + f*x])/(d + c*Cos[e + f*x]
))/(c^2*(c - d)*(c + d)*f)
```

fricas [B] time = 0.50, size = 561, normalized size = 4.56

$$\left[\frac{2\left(ac^5-2\,ac^3d^2+acd^4\right)fx\cos\left(fx+e\right)+2\left(ac^4d-2\,ac^2d^3+ad^5\right)fx-\left(bc^3d-2\,ac^2d^2+ad^4+\left(bc^4-2\,ac^3d+\ldots\right.\right.}{2\left(\left(c^7-2\,c^5d^2\ldots\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(a*c^5 - 2*a*c^3*d^2 + a*c*d^4)*f*x*cos(f*x + e) + 2*(a*c^4*d - 2*a
*c^2*d^3 + a*d^5)*f*x - (b*c^3*d - 2*a*c^2*d^2 + a*d^4 + (b*c^4 - 2*a*c^3*d
 + a*c*d^3)*cos(f*x + e))*sqrt(c^2 - d^2)*log((2*c*d*cos(f*x + e) - (c^2 -
```

```
2*d^2)*cos(f*x + e)^2 - 2*sqrt(c^2 - d^2)*(d*cos(f*x + e) + c)*sin(f*x + e)
 + 2*c^2 - d^2)/(c^2*cos(f*x + e)^2 + 2*c*d*cos(f*x + e) + d^2)) - 2*(b*c^4
*d - a*c^3*d^2 - b*c^2*d^3 + a*c*d^4)*sin(f*x + e))/((c^7 - 2*c^5*d^2 + c^3
*d^4)*f*cos(f*x + e) + (c^6*d - 2*c^4*d^3 + c^2*d^5)*f), ((a*c^5 - 2*a*c^3*
d^2 + a*c*d^4)*f*x*cos(f*x + e) + (a*c^4*d - 2*a*c^2*d^3 + a*d^5)*f*x + (b*
c^3*d - 2*a*c^2*d^2 + a*d^4 + (b*c^4 - 2*a*c^3*d + a*c*d^3)*cos(f*x + e))*s
qrt(-c^2 + d^2)*arctan(-sqrt(-c^2 + d^2)*(d*cos(f*x + e) + c)/((c^2 - d^2)*
sin(f*x + e))) - (b*c^4*d - a*c^3*d^2 - b*c^2*d^3 + a*c*d^4)*sin(f*x + e))/
((c^7 - 2*c^5*d^2 + c^3*d^4)*f*cos(f*x + e) + (c^6*d - 2*c^4*d^3 + c^2*d^5)
*f)]
```

giac [A] time = 0.58, size = 209, normalized size = 1.70

$$\frac{\frac{2\left(bc^3-2ac^2d+ad^3\right)\left(\pi\left\lfloor\frac{fx+e}{2\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(-2c+2d)+\arctan\left(-\frac{c\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-d\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)}{\sqrt{-c^2+d^2}}\right)\right)}{\left(c^4-c^2d^2\right)\sqrt{-c^2+d^2}}+\frac{(fx+e)a}{c^2}+\frac{2\left(bcd\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)-ad^2\tan\left(\frac{1}{2}fx\right.\right.}{\left(c^3-cd^2\right)\left(c\tan\left(\frac{1}{2}fx+\frac{1}{2}e\right)^2-d\tan\left(\frac{1}{2}fx\right.\right.}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] (2*(b*c^3 - 2*a*c^2*d + a*d^3)*(pi*floor(1/2*(f*x + e)/pi + 1/2)*sgn(-2*c +
 2*d) + arctan(-(c*tan(1/2*f*x + 1/2*e) - d*tan(1/2*f*x + 1/2*e))/sqrt(-c^2
 + d^2)))/((c^4 - c^2*d^2)*sqrt(-c^2 + d^2)) + (f*x + e)*a/c^2 + 2*(b*c*d*t
an(1/2*f*x + 1/2*e) - a*d^2*tan(1/2*f*x + 1/2*e))/((c^3 - c*d^2)*(c*tan(1/2
*f*x + 1/2*e)^2 - d*tan(1/2*f*x + 1/2*e)^2 - c - d)))/f
```

maple [B] time = 0.77, size = 328, normalized size = 2.67

$$-\frac{2d^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)a}{fc\left(c^2-d^2\right)\left(\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)c-\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)d-c-d\right)}+\frac{2d\tan\left(\frac{e}{2}+\frac{fx}{2}\right)b}{f\left(c^2-d^2\right)\left(\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)c-\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^2,x)
```

```
[Out] -2/f/c*d^2/(c^2-d^2)*tan(1/2*e+1/2*f*x)/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1
/2*f*x)^2*d-c-d)*a+2/f*d/(c^2-d^2)*tan(1/2*e+1/2*f*x)/(tan(1/2*e+1/2*f*x)^2
*c-tan(1/2*e+1/2*f*x)^2*d-c-d)*b-4/f/(c+d)/(c-d)/((c+d)*(c-d))^(1/2)*arctan
h(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*d+2/f/c^2/(c+d)/(c-d)/((c
+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*d^
3+2/f*c/(c+d)/(c-d)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((
c+d)*(c-d))^(1/2))*b+2/f*a/c^2*arctan(tan(1/2*e+1/2*f*x))
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [B] time = 9.33, size = 3763, normalized size = 30.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))/(c + d/cos(e + f*x))^2,x)
```

```
[Out] (2*a*atan(((a*((a*((32*(a*c^4*d^5 - b*c^9 - a*c^9 - 3*a*c^6*d^3 + a*c^7*d^2
 - b*c^6*d^3 + b*c^7*d^2 + 2*a*c^8*d + b*c^8*d))/(c^5*d + c^6 - c^3*d^3 - c
^4*d^2) - (a*tan(e/2 + (f*x)/2)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^
4 - 4*c^7*d^3 - 2*c^8*d^2)*32i)/(c^2*(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i
)/c^2 + (32*tan(e/2 + (f*x)/2)*(a^2*c^6 + 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5
 - 2*a^2*c^5*d - 5*a^2*c^2*d^4 + 4*a^2*c^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*
d + 2*a*b*c^3*d^3))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))/c^2 - (a*((a*((32*(
a*c^4*d^5 - b*c^9 - a*c^9 - 3*a*c^6*d^3 + a*c^7*d^2 - b*c^6*d^3 + b*c^7*d^2
 + 2*a*c^8*d + b*c^8*d))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (a*tan(e/2 + (
f*x)/2)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2*c^8*d^
2)*32i)/(c^2*(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i)/c^2 - (32*tan(e/2 + (f
*x)/2)*(a^2*c^6 + 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5 - 2*a^2*c^5*d - 5*a^2*c
^2*d^4 + 4*a^2*c^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*d + 2*a*b*c^3*d^3))/(c^4
*d + c^5 - c^2*d^3 - c^3*d^2)))/c^2)/((64*(a^3*d^5 + a*b^2*c^5 - a^2*b*c^5
- a^3*c*d^4 + 2*a^3*c^4*d - 3*a^3*c^2*d^3 + 2*a^3*c^3*d^2 + a^2*b*c^2*d^3 +
 a^2*b*c^3*d^2 - 3*a^2*b*c^4*d))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (a*((a
*((32*(a*c^4*d^5 - b*c^9 - a*c^9 - 3*a*c^6*d^3 + a*c^7*d^2 - b*c^6*d^3 + b*
c^7*d^2 + 2*a*c^8*d + b*c^8*d))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) - (a*tan(
e/2 + (f*x)/2)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2
*c^8*d^2)*32i)/(c^2*(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i)/c^2 + (32*tan(e
/2 + (f*x)/2)*(a^2*c^6 + 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5 - 2*a^2*c^5*d -
5*a^2*c^2*d^4 + 4*a^2*c^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*d + 2*a*b*c^3*d^3
))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2))*1i)/c^2 + (a*((a*((32*(a*c^4*d^5 - b*
c^9 - a*c^9 - 3*a*c^6*d^3 + a*c^7*d^2 - b*c^6*d^3 + b*c^7*d^2 + 2*a*c^8*d +
 b*c^8*d))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (a*tan(e/2 + (f*x)/2)*(2*c^9
*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2*c^8*d^2)*32i)/(c^2*(
c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i)/c^2 - (32*tan(e/2 + (f*x)/2)*(a^2*c^
6 + 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5 - 2*a^2*c^5*d - 5*a^2*c^2*d^4 + 4*a^2
*c^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*d + 2*a*b*c^3*d^3))/(c^4*d + c^5 - c^2
*d^3 - c^3*d^2))*1i)/c^2)))/(c^2*f) + (atan(((((32*tan(e/2 + (f*x)/2)*(a^2*
c^6 + 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5 - 2*a^2*c^5*d - 5*a^2*c^2*d^4 + 4*a
^2*c^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*d + 2*a*b*c^3*d^3))/(c^4*d + c^5 - c
^2*d^3 - c^3*d^2) + (((32*(a*c^4*d^5 - b*c^9 - a*c^9 - 3*a*c^6*d^3 + a*c^7*
d^2 - b*c^6*d^3 + b*c^7*d^2 + 2*a*c^8*d + b*c^8*d))/(c^5*d + c^6 - c^3*d^3
- c^4*d^2) - (32*tan(e/2 + (f*x)/2)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*
c^3 - 2*a*c^2*d)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 -
 2*c^8*d^2))/((c^4*d + c^5 - c^2*d^3 - c^3*d^2)*(c^8 - c^2*d^6 + 3*c^4*d^4
- 3*c^6*d^2)))*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*c^3 - 2*a*c^2*d))/(c^
8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 +
b*c^3 - 2*a*c^2*d)*1i)/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2) + (((32*tan(
e/2 + (f*x)/2)*(a^2*c^6 + 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5 - 2*a^2*c^5*d -
 5*a^2*c^2*d^4 + 4*a^2*c^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*d + 2*a*b*c^3*d^
3))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2) - (((32*(a*c^4*d^5 - b*c^9 - a*c^9 -
3*a*c^6*d^3 + a*c^7*d^2 - b*c^6*d^3 + b*c^7*d^2 + 2*a*c^8*d + b*c^8*d))/(c^
5*d + c^6 - c^3*d^3 - c^4*d^2) + (32*tan(e/2 + (f*x)/2)*((c + d)^3*(c - d)^
3)^(1/2)*(a*d^3 + b*c^3 - 2*a*c^2*d)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c
^6*d^4 - 4*c^7*d^3 - 2*c^8*d^2))/((c^4*d + c^5 - c^2*d^3 - c^3*d^2)*(c^8 -
c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2)))*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*c
^3 - 2*a*c^2*d))/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))*((c + d)^3*(c - d
)^3)^(1/2)*(a*d^3 + b*c^3 - 2*a*c^2*d)*1i)/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c
^6*d^2))/((64*(a^3*d^5 + a*b^2*c^5 - a^2*b*c^5 - a^3*c*d^4 + 2*a^3*c^4*d -
3*a^3*c^2*d^3 + 2*a^3*c^3*d^2 + a^2*b*c^2*d^3 + a^2*b*c^3*d^2 - 3*a^2*b*c^4
```

```
*d))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (((32*tan(e/2 + (f*x)/2)*(a^2*c^6
+ 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5 - 2*a^2*c^5*d - 5*a^2*c^2*d^4 + 4*a^2*c
^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*d + 2*a*b*c^3*d^3))/(c^4*d + c^5 - c^2*d
^3 - c^3*d^2) + (((32*(a*c^4*d^5 - b*c^9 - a*c^9 - 3*a*c^6*d^3 + a*c^7*d^2
- b*c^6*d^3 + b*c^7*d^2 + 2*a*c^8*d + b*c^8*d))/(c^5*d + c^6 - c^3*d^3 - c^
4*d^2) - (32*tan(e/2 + (f*x)/2)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*c^3
- 2*a*c^2*d)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2*c
^8*d^2))/((c^4*d + c^5 - c^2*d^3 - c^3*d^2)*(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*
c^6*d^2)))*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*c^3 - 2*a*c^2*d))/(c^8 -
c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*c^
3 - 2*a*c^2*d))/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2) - (((32*tan(e/2 + (
f*x)/2)*(a^2*c^6 + 2*a^2*d^6 + b^2*c^6 - 2*a^2*c*d^5 - 2*a^2*c^5*d - 5*a^2*
c^2*d^4 + 4*a^2*c^3*d^3 + 3*a^2*c^4*d^2 - 4*a*b*c^5*d + 2*a*b*c^3*d^3))/(c^
4*d + c^5 - c^2*d^3 - c^3*d^2) - (((32*(a*c^4*d^5 - b*c^9 - a*c^9 - 3*a*c^6
*d^3 + a*c^7*d^2 - b*c^6*d^3 + b*c^7*d^2 + 2*a*c^8*d + b*c^8*d))/(c^5*d + c
^6 - c^3*d^3 - c^4*d^2) + (32*tan(e/2 + (f*x)/2)*((c + d)^3*(c - d)^3)^(1/2
)*(a*d^3 + b*c^3 - 2*a*c^2*d)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4
- 4*c^7*d^3 - 2*c^8*d^2))/((c^4*d + c^5 - c^2*d^3 - c^3*d^2)*(c^8 - c^2*d^6
 + 3*c^4*d^4 - 3*c^6*d^2)))*((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*c^3 - 2*
a*c^2*d))/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))*((c + d)^3*(c - d)^3)^(1
/2)*(a*d^3 + b*c^3 - 2*a*c^2*d))/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2)))*
((c + d)^3*(c - d)^3)^(1/2)*(a*d^3 + b*c^3 - 2*a*c^2*d)*2i)/(f*(c^8 - c^2*d
^6 + 3*c^4*d^4 - 3*c^6*d^2)) - (2*tan(e/2 + (f*x)/2)*(a*d^2 - b*c*d))/(f*(c
 + d)*(c*d - c^2)*(c + d - tan(e/2 + (f*x)/2)^2*(c - d)))
```

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

$$\int \frac{a + b\sec\left(e + fx\right)}{\left(c + d\sec\left(e + fx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))**2,x)
```

```
[Out] Integral((a + b*sec(e + f*x))/(c + d*sec(e + f*x))**2, x)
```

3.191 $\int \frac{a+b\sec(e+fx)}{(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=204

$$-\frac{d(bc-ad)\tan(e+fx)}{2cf\left(c^2-d^2\right)(c+d\sec(e+fx))^2}-\frac{d\left(-5ac^2d+2ad^3+3bc^3\right)\tan(e+fx)}{2c^2f\left(c^2-d^2\right)^2(c+d\sec(e+fx))}+\frac{\left(bc^3\left(2c^2+d^2\right)-ad\left(6c^4-5c^2d^2+2\right.\right.}{c^3f(c-d)^{5/2}(\ldots}$$

```
[Out] a*x/c^3+(b*c^3*(2*c^2+d^2)-a*d*(6*c^4-5*c^2*d^2+2*d^4))*arctanh((c-d)^(1/2)
*tan(1/2*e+1/2*f*x)/(c+d)^(1/2))/c^3/(c-d)^(5/2)/(c+d)^(5/2)/f-1/2*d*(-a*d+
b*c)*tan(f*x+e)/c/(c^2-d^2)/f/(c+d*sec(f*x+e))^2-1/2*d*(-5*a*c^2*d+2*a*d^3+
3*b*c^3)*tan(f*x+e)/c^2/(c^2-d^2)^2/f/(c+d*sec(f*x+e))
```

Rubi [A] time = 0.51, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {3923, 4060, 3919, 3831, 2659, 208}

$$\frac{\left(bc^3\left(2c^2+d^2\right)-ad\left(-5c^2d^2+6c^4+2d^4\right)\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^3f(c-d)^{5/2}(c+d)^{5/2}}-\frac{d\left(-5ac^2d+2ad^3+3bc^3\right)\tan(e+fx)}{2c^2f\left(c^2-d^2\right)^2(c+d\sec(e+fx))}-\frac{\ldots}{2c\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (a*x)/c^3 + ((b*c^3*(2*c^2 + d^2) - a*d*(6*c^4 - 5*c^2*d^2 + 2*d^4))*ArcTan
h[(Sqrt[c - d]*Tan[(e + f*x)/2])/Sqrt[c + d]])/(c^3*(c - d)^(5/2)*(c + d)^(
5/2)*f) - (d*(b*c - a*d)*Tan[e + f*x])/(2*c*(c^2 - d^2)*f*(c + d*Sec[e + f*
x])^2) - (d*(3*b*c^3 - 5*a*c^2*d + 2*a*d^3)*Tan[e + f*x])/(2*c^2*(c^2 - d^2
)^2*f*(c + d*Sec[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 3831

```
Int[csc[(e_.) + (f_.)*(x_)]/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)), x_Symbo
l] :> Dist[1/b, Int[1/(1 + (a*Sin[e + f*x])/b), x], x] /; FreeQ[{a, b, e, f
}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3919

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/(csc[(e_.) + (f_.)*(x_)]*(b_.) +
 (a_)), x_Symbol] :> Simp[(c*x)/a, x] - Dist[(b*c - a*d)/a, Int[Csc[e + f*x
]/(a + b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0]
```

Rule 3923

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> Simp[(b*(b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f
*x])^(m + 1))/(a*f*(m + 1)*(a^2 - b^2)), x] + Dist[1/(a*(m + 1)*(a^2 - b^2)
), Int[(a + b*Csc[e + f*x])^(m + 1)*Simp[c*(a^2 - b^2)*(m + 1) - (a*(b*c -
a*d)*(m + 1))*Csc[e + f*x] + b*(b*c - a*d)*(m + 2)*Csc[e + f*x]^2, x], x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && Ne
Q[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 4060

```
Int[((A_.) + csc[(e_.) + (f_.)*(x_)]*(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.
))*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_Symbol] :> Simp[((A*b^2 -
 a*b*B + a^2*C)*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m + 1))/(a*f*(m + 1)*(a^
2 - b^2)), x] + Dist[1/(a*(m + 1)*(a^2 - b^2)), Int[(a + b*Csc[e + f*x])^(m
 + 1)*Simp[A*(a^2 - b^2)*(m + 1) - a*(A*b - a*B + b*C)*(m + 1)*Csc[e + f*x]
 + (A*b^2 - a*b*B + a^2*C)*(m + 2)*Csc[e + f*x]^2, x], x], x] /; FreeQ[{a,
b, e, f, A, B, C}, x] && NeQ[a^2 - b^2, 0] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{a+b\sec(e+fx)}{(c+d\sec(e+fx))^3}\,dx = -\frac{d(bc-ad)\tan(e+fx)}{2c\left(c^2-d^2\right)f(c+d\sec(e+fx))^2} - \frac{\int \frac{-2a\left(c^2-d^2\right)-2c(bc-ad)\sec(e+fx)+d(bc-ad)\sec^2(e+fx)}{(c+d\sec(e+fx))^2}}{2c\left(c^2-d^2\right)}$$

$$= -\frac{d(bc-ad)\tan(e+fx)}{2c\left(c^2-d^2\right)f(c+d\sec(e+fx))^2} - \frac{d\left(3bc^3-5ac^2d+2ad^3\right)\tan(e+fx)}{2c^2\left(c^2-d^2\right)^2 f(c+d\sec(e+fx))} + \int$$

$$= \frac{ax}{c^3} - \frac{d(bc-ad)\tan(e+fx)}{2c\left(c^2-d^2\right)f(c+d\sec(e+fx))^2} - \frac{d\left(3bc^3-5ac^2d+2ad^3\right)\tan(e+fx)}{2c^2\left(c^2-d^2\right)^2 f(c+d\sec(e+fx))} +$$

$$= \frac{ax}{c^3} - \frac{d(bc-ad)\tan(e+fx)}{2c\left(c^2-d^2\right)f(c+d\sec(e+fx))^2} - \frac{d\left(3bc^3-5ac^2d+2ad^3\right)\tan(e+fx)}{2c^2\left(c^2-d^2\right)^2 f(c+d\sec(e+fx))} +$$

$$= \frac{ax}{c^3} - \frac{d(bc-ad)\tan(e+fx)}{2c\left(c^2-d^2\right)f(c+d\sec(e+fx))^2} - \frac{d\left(3bc^3-5ac^2d+2ad^3\right)\tan(e+fx)}{2c^2\left(c^2-d^2\right)^2 f(c+d\sec(e+fx))} +$$

$$= \frac{ax}{c^3} + \frac{\left(2bc^5-6ac^4d+bc^3d^2+5ac^2d^3-2ad^5\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^3(c-d)^{5/2}(c+d)^{5/2}f} - \frac{}{2c\left(c^2\right.}$$

Mathematica [A] time = 1.42, size = 267, normalized size = 1.31

$$\frac{\sec^2(e+fx)(a+b\sec(e+fx))(c\cos(e+fx)+d)\left(-\frac{cd\left(-6ac^2d+3ad^3+4bc^3-bcd^2\right)\sin(e+fx)(c\cos(e+fx)+d)}{(c-d)^2(c+d)^2} - \frac{2\left(ad\left(-6c^4+5c^2\right.\right.}{}\right.}{2c^3f(a\cos(e+fx)+b)(}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] ((d + c*Cos[e + f*x])*Sec[e + f*x]^2*(a + b*Sec[e + f*x])*(2*a*(e + f*x)*(d
 + c*Cos[e + f*x])^2 - (2*(b*c^3*(2*c^2 + d^2) + a*d*(-6*c^4 + 5*c^2*d^2 -
2*d^4))*ArcTanh[((-c + d)*Tan[(e + f*x)/2])/Sqrt[c^2 - d^2]]*(d + c*Cos[e +
 f*x])^2)/(c^2 - d^2)^(5/2) + (c*d^2*(b*c - a*d)*Sin[e + f*x])/((c - d)*(c
+ d)) - (c*d*(4*b*c^3 - 6*a*c^2*d - b*c*d^2 + 3*a*d^3)*(d + c*Cos[e + f*x])
*Sin[e + f*x])/((c - d)^2*(c + d)^2)))/(2*c^3*f*(b + a*Cos[e + f*x])*(c + d
*Sec[e + f*x])^3)
```

fricas [B] time = 0.59, size = 1152, normalized size = 5.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/4*(4*(a*c^8 - 3*a*c^6*d^2 + 3*a*c^4*d^4 - a*c^2*d^6)*f*x*cos(f*x + e)^2
+ 8*(a*c^7*d - 3*a*c^5*d^3 + 3*a*c^3*d^5 - a*c*d^7)*f*x*cos(f*x + e) + 4*(a
*c^6*d^2 - 3*a*c^4*d^4 + 3*a*c^2*d^6 - a*d^8)*f*x - (2*b*c^5*d^2 - 6*a*c^4*
d^3 + b*c^3*d^4 + 5*a*c^2*d^5 - 2*a*d^7 + (2*b*c^7 - 6*a*c^6*d + b*c^5*d^2
+ 5*a*c^4*d^3 - 2*a*c^2*d^5)*cos(f*x + e)^2 + 2*(2*b*c^6*d - 6*a*c^5*d^2 +
b*c^4*d^3 + 5*a*c^3*d^4 - 2*a*c*d^6)*cos(f*x + e))*sqrt(c^2 - d^2)*log((2*c
*d*cos(f*x + e) - (c^2 - 2*d^2)*cos(f*x + e)^2 - 2*sqrt(c^2 - d^2)*(d*cos(f
*x + e) + c)*sin(f*x + e) + 2*c^2 - d^2)/(c^2*cos(f*x + e)^2 + 2*c*d*cos(f*
x + e) + d^2)) - 2*(3*b*c^6*d^2 - 5*a*c^5*d^3 - 3*b*c^4*d^4 + 7*a*c^3*d^5 -
 2*a*c*d^7 + (4*b*c^7*d - 6*a*c^6*d^2 - 5*b*c^5*d^3 + 9*a*c^4*d^4 + b*c^3*d
^5 - 3*a*c^2*d^6)*cos(f*x + e))*sin(f*x + e))/((c^11 - 3*c^9*d^2 + 3*c^7*d^
4 - c^5*d^6)*f*cos(f*x + e)^2 + 2*(c^10*d - 3*c^8*d^3 + 3*c^6*d^5 - c^4*d^7
)*f*cos(f*x + e) + (c^9*d^2 - 3*c^7*d^4 + 3*c^5*d^6 - c^3*d^8)*f), 1/2*(2*(
a*c^8 - 3*a*c^6*d^2 + 3*a*c^4*d^4 - a*c^2*d^6)*f*x*cos(f*x + e)^2 + 4*(a*c^
7*d - 3*a*c^5*d^3 + 3*a*c^3*d^5 - a*c*d^7)*f*x*cos(f*x + e) + 2*(a*c^6*d^2
- 3*a*c^4*d^4 + 3*a*c^2*d^6 - a*d^8)*f*x + (2*b*c^5*d^2 - 6*a*c^4*d^3 + b*c
^3*d^4 + 5*a*c^2*d^5 - 2*a*d^7 + (2*b*c^7 - 6*a*c^6*d + b*c^5*d^2 + 5*a*c^4
*d^3 - 2*a*c^2*d^5)*cos(f*x + e)^2 + 2*(2*b*c^6*d - 6*a*c^5*d^2 + b*c^4*d^3
 + 5*a*c^3*d^4 - 2*a*c*d^6)*cos(f*x + e))*sqrt(-c^2 + d^2)*arctan(-sqrt(-c^
2 + d^2)*(d*cos(f*x + e) + c)/((c^2 - d^2)*sin(f*x + e))) - (3*b*c^6*d^2 -
5*a*c^5*d^3 - 3*b*c^4*d^4 + 7*a*c^3*d^5 - 2*a*c*d^7 + (4*b*c^7*d - 6*a*c^6*
d^2 - 5*b*c^5*d^3 + 9*a*c^4*d^4 + b*c^3*d^5 - 3*a*c^2*d^6)*cos(f*x + e))*si
n(f*x + e))/((c^11 - 3*c^9*d^2 + 3*c^7*d^4 - c^5*d^6)*f*cos(f*x + e)^2 + 2*
(c^10*d - 3*c^8*d^3 + 3*c^6*d^5 - c^4*d^7)*f*cos(f*x + e) + (c^9*d^2 - 3*c^
7*d^4 + 3*c^5*d^6 - c^3*d^8)*f)]
```

giac [B] time = 8.54, size = 477, normalized size = 2.34

$$\frac{\left(2\,bc^5-6\,ac^4d+bc^3d^2+5\,ac^2d^3-2\,ad^5\right)\left(\pi\left\lfloor\frac{fx+e}{2\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(-2\,c+2\,d)+\arctan\left(-\frac{c\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-d\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)}{\sqrt{-c^2+d^2}}\right)\right)}{\left(c^7-2\,c^5d^2+c^3d^4\right)\sqrt{-c^2+d^2}}+\frac{\left(fx+e\right)a}{c^3}+\frac{4\,bc^4d\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)^3-6\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] ((2*b*c^5 - 6*a*c^4*d + b*c^3*d^2 + 5*a*c^2*d^3 - 2*a*d^5)*(pi*floor(1/2*(f
*x + e)/pi + 1/2)*sgn(-2*c + 2*d) + arctan(-(c*tan(1/2*f*x + 1/2*e) - d*tan
(1/2*f*x + 1/2*e))/sqrt(-c^2 + d^2)))/((c^7 - 2*c^5*d^2 + c^3*d^4)*sqrt(-c^
2 + d^2)) + (f*x + e)*a/c^3 + (4*b*c^4*d*tan(1/2*f*x + 1/2*e)^3 - 6*a*c^3*d
^2*tan(1/2*f*x + 1/2*e)^3 - 3*b*c^3*d^2*tan(1/2*f*x + 1/2*e)^3 + 5*a*c^2*d^
3*tan(1/2*f*x + 1/2*e)^3 - b*c^2*d^3*tan(1/2*f*x + 1/2*e)^3 + 3*a*c*d^4*tan
(1/2*f*x + 1/2*e)^3 - 2*a*d^5*tan(1/2*f*x + 1/2*e)^3 - 4*b*c^4*d*tan(1/2*f*
```

```
x + 1/2*e) + 6*a*c^3*d^2*tan(1/2*f*x + 1/2*e) - 3*b*c^3*d^2*tan(1/2*f*x + 1
/2*e) + 5*a*c^2*d^3*tan(1/2*f*x + 1/2*e) + b*c^2*d^3*tan(1/2*f*x + 1/2*e) -
 3*a*c*d^4*tan(1/2*f*x + 1/2*e) - 2*a*d^5*tan(1/2*f*x + 1/2*e))/((c^6 - 2*c
^4*d^2 + c^2*d^4)*(c*tan(1/2*f*x + 1/2*e)^2 - d*tan(1/2*f*x + 1/2*e)^2 - c
- d)^2))/f
```

maple [B] time = 0.77, size = 1063, normalized size = 5.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^3,x)
```

```
[Out] -6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2*d^2/(c-d)/(c^2+2
*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a-1/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/
2*f*x)^2*d-c-d)^2*d^3/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a+2/f/c^2/
(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2*d^4/(c-d)/(c^2+2*c*d+
d^2)*tan(1/2*e+1/2*f*x)^3*a+4/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x
)^2*d-c-d)^2*d/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b+1/f/(tan(1/2*e+
1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2*d^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/
2*e+1/2*f*x)^3*b+6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2*
d^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a-1/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/
2*e+1/2*f*x)^2*d-c-d)^2*d^3/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a-2/f/c^2/(tan
(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2*d^4/(c+d)/(c-d)^2*tan(1/2
*e+1/2*f*x)*a-4/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2*d
/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*b+1/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1
/2*f*x)^2*d-c-d)^2*d^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*b-6/f*c/(c^4-2*c^2*
d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))
^(1/2))*a*d+5/f/c/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e
+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*d^3-2/f/c^3/(c^4-2*c^2*d^2+d^4)/((c+
d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*d^5
+2/f*c^2/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)
*(c-d)/((c+d)*(c-d))^(1/2))*b+1/f/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*a
rctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*b*d^2+2/f*a/c^3*arctan
(tan(1/2*e+1/2*f*x))
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [B] time = 11.35, size = 6909, normalized size = 33.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))/(c + d/cos(e + f*x))^3,x)
```

```
[Out] (2*a*atan(((a*((8*tan(e/2 + (f*x)/2)*(4*a^2*c^10 + 8*a^2*d^10 + 4*b^2*c^10
- 8*a^2*c*d^9 - 8*a^2*c^9*d - 32*a^2*c^2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c^4*
d^6 - 48*a^2*c^5*d^5 - 52*a^2*c^6*d^4 + 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2 + b
^2*c^6*d^4 + 4*b^2*c^8*d^2 - 24*a*b*c^9*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^5 +
```

```
 8*a*b*c^7*d^3))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4
 - 3*c^8*d^3 - 3*c^9*d^2) + (a*((8*(4*a*c^15 + 4*b*c^15 - 4*a*c^6*d^9 + 2*a
*c^7*d^8 + 18*a*c^8*d^7 - 4*a*c^9*d^6 - 36*a*c^10*d^5 + 6*a*c^11*d^4 + 34*a
*c^12*d^3 - 8*a*c^13*d^2 - 2*b*c^8*d^7 + 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*b*c
^13*d^2 - 12*a*c^14*d - 4*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3
*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (a*tan(e/2 + (f*x)/2)*(8*
c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 4
8*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d + c^1
1 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*1i
)/c^3))/c^3 + (a*((8*tan(e/2 + (f*x)/2)*(4*a^2*c^10 + 8*a^2*d^10 + 4*b^2*c^
10 - 8*a^2*c*d^9 - 8*a^2*c^9*d - 32*a^2*c^2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c
^4*d^6 - 48*a^2*c^5*d^5 - 52*a^2*c^6*d^4 + 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2
+ b^2*c^6*d^4 + 4*b^2*c^8*d^2 - 24*a*b*c^9*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^
5 + 8*a*b*c^7*d^3))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*
d^4 - 3*c^8*d^3 - 3*c^9*d^2) - (a*((8*(4*a*c^15 + 4*b*c^15 - 4*a*c^6*d^9 +
2*a*c^7*d^8 + 18*a*c^8*d^7 - 4*a*c^9*d^6 - 36*a*c^10*d^5 + 6*a*c^11*d^4 + 3
4*a*c^12*d^3 - 8*a*c^13*d^2 - 2*b*c^8*d^7 + 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*
b*c^13*d^2 - 12*a*c^14*d - 4*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6
+ 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (a*tan(e/2 + (f*x)/2)*
(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6
+ 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d +
c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))
*1i)/c^3))/c^3)/((16*(4*a^3*d^9 + 4*a*b^2*c^9 - 4*a^2*b*c^9 - 2*a^3*c*d^8 +
 12*a^3*c^8*d - 18*a^3*c^2*d^7 + 13*a^3*c^3*d^6 + 36*a^3*c^4*d^5 - 26*a^3*c
^5*d^4 - 34*a^3*c^6*d^3 + 24*a^3*c^7*d^2 + a*b^2*c^5*d^4 + 4*a*b^2*c^7*d^2
- 2*a^2*b*c^2*d^7 - 2*a^2*b*c^3*d^6 + 2*a^2*b*c^4*d^5 + 2*a^2*b*c^6*d^3 + 6
*a^2*b*c^7*d^2 - 20*a^2*b*c^8*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^
8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (a*((8*tan(e/2 + (f*x)/2)*(4
*a^2*c^10 + 8*a^2*d^10 + 4*b^2*c^10 - 8*a^2*c*d^9 - 8*a^2*c^9*d - 32*a^2*c^
2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c^4*d^6 - 48*a^2*c^5*d^5 - 52*a^2*c^6*d^4 +
 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2 + b^2*c^6*d^4 + 4*b^2*c^8*d^2 - 24*a*b*c^9
*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^5 + 8*a*b*c^7*d^3))/(c^10*d + c^11 - c^4*d
^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) + (a*((8*(4*a
*c^15 + 4*b*c^15 - 4*a*c^6*d^9 + 2*a*c^7*d^8 + 18*a*c^8*d^7 - 4*a*c^9*d^6 -
 36*a*c^10*d^5 + 6*a*c^11*d^4 + 34*a*c^12*d^3 - 8*a*c^13*d^2 - 2*b*c^8*d^7
+ 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*b*c^13*d^2 - 12*a*c^14*d - 4*b*c^14*d))/(c
^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c
^11*d^2) - (a*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^
8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3
- 8*c^14*d^2)*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c
^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*1i)/c^3)*1i)/c^3 + (a*((8*tan(e/2 + (f*x)
/2)*(4*a^2*c^10 + 8*a^2*d^10 + 4*b^2*c^10 - 8*a^2*c*d^9 - 8*a^2*c^9*d - 32*
a^2*c^2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c^4*d^6 - 48*a^2*c^5*d^5 - 52*a^2*c^6
*d^4 + 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2 + b^2*c^6*d^4 + 4*b^2*c^8*d^2 - 24*a
*b*c^9*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^5 + 8*a*b*c^7*d^3))/(c^10*d + c^11 -
 c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) - (a*((
8*(4*a*c^15 + 4*b*c^15 - 4*a*c^6*d^9 + 2*a*c^7*d^8 + 18*a*c^8*d^7 - 4*a*c^9
*d^6 - 36*a*c^10*d^5 + 6*a*c^11*d^4 + 34*a*c^12*d^3 - 8*a*c^13*d^2 - 2*b*c^
8*d^7 + 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*b*c^13*d^2 - 12*a*c^14*d - 4*b*c^14*
d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3
 - 3*c^11*d^2) + (a*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 +
 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^1
3*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5
 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*1i)/c^3)*1i)/c^3)))/(c^3*f) - ((tan
(e/2 + (f*x)/2)^3*(2*a*d^4 - 6*a*c^2*d^2 + b*c^2*d^2 - a*c*d^3 + 4*b*c^3*d)
)/((c^2*d - c^3)*(c + d)^2) + (tan(e/2 + (f*x)/2)*(2*a*d^4 - 6*a*c^2*d^2 -
b*c^2*d^2 + a*c*d^3 + 4*b*c^3*d))/((c + d)*(c^4 - 2*c^3*d + c^2*d^2)))/(f*(
2*c*d - tan(e/2 + (f*x)/2)^2*(2*c^2 - 2*d^2) + tan(e/2 + (f*x)/2)^4*(c^2 -
2*c*d + d^2) + c^2 + d^2)) + (atan(((((8*tan(e/2 + (f*x)/2)*(4*a^2*c^10 + 8
```

*a^2*d^10 + 4*b^2*c^10 - 8*a^2*c*d^9 - 8*a^2*c^9*d - 32*a^2*c^2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c^4*d^6 - 48*a^2*c^5*d^5 - 52*a^2*c^6*d^4 + 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2 + b^2*c^6*d^4 + 4*b^2*c^8*d^2 - 24*a*b*c^9*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^5 + 8*a*b*c^7*d^3))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) + (((8*(4*a*c^15 + 4*b*c^15 - 4*a*c^6*d^9 + 2*a*c^7*d^8 + 18*a*c^8*d^7 - 4*a*c^9*d^6 - 36*a*c^10*d^5 + 6*a*c^11*d^4 + 34*a*c^12*d^3 - 8*a*c^13*d^2 - 2*b*c^8*d^7 + 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*b*c^13*d^2 - 12*a*c^14*d - 4*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (4*tan(e/2 + (f*x)/2)*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d)*1i)/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)) + (((8*tan(e/2 + (f*x)/2)*(4*a^2*c^10 + 8*a^2*d^10 + 4*b^2*c^10 - 8*a^2*c*d^9 - 8*a^2*c^9*d - 32*a^2*c^2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c^4*d^6 - 48*a^2*c^5*d^5 - 52*a^2*c^6*d^4 + 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2 + b^2*c^6*d^4 + 4*b^2*c^8*d^2 - 24*a*b*c^9*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^5 + 8*a*b*c^7*d^3))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) - (((8*(4*a*c^15 + 4*b*c^15 - 4*a*c^6*d^9 + 2*a*c^7*d^8 + 18*a*c^8*d^7 - 4*a*c^9*d^6 - 36*a*c^10*d^5 + 6*a*c^11*d^4 + 34*a*c^12*d^3 - 8*a*c^13*d^2 - 2*b*c^8*d^7 + 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*b*c^13*d^2 - 12*a*c^14*d - 4*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (4*tan(e/2 + (f*x)/2)*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d)*1i)/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))/((16*(4*a^3*d^9 + 4*a*b^2*c^9 - 4*a^2*b*c^9 - 2*a^3*c*d^8 + 12*a^3*c^8*d - 18*a^3*c^2*d^7 + 13*a^3*c^3*d^6 + 36*a^3*c^4*d^5 - 26*a^3*c^5*d^4 - 34*a^3*c^6*d^3 + 24*a^3*c^7*d^2 + a*b^2*c^5*d^4 + 4*a*b^2*c^7*d^2 - 2*a^2*b*c^2*d^7 - 2*a^2*b*c^3*d^6 + 2*a^2*b*c^4*d^5 + 2*a^2*b*c^6*d^3 + 6*a^2*b*c^7*d^2 - 20*a^2*b*c^8*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (((8*tan(e/2 + (f*x)/2)*(4*a^2*c^10 + 8*a^2*d^10 + 4*b^2*c^10 - 8*a^2*c*d^9 - 8*a^2*c^9*d - 32*a^2*c^2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c^4*d^6 - 48*a^2*c^5*d^5 - 52*a^2*c^6*d^4 + 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2 + b^2*c^6*d^4 + 4*b^2*c^8*d^2 - 24*a*b*c^9*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^5 + 8*a*b*c^7*d^3))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) + (((8*(4*a*c^15 + 4*b*c^15 - 4*a*c^6*d^9 + 2*a*c^7*d^8 + 18*a*c^8*d^7 - 4*a*c^9*d^6 - 36*a*c^10*d^5 + 6*a*c^11*d^4 + 34*a*c^12*d^3 - 8*a*c^13*d^2 - 2*b*c^8*d^7 + 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*b*c^13*d^2 - 12*a*c^14*d - 4*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (4*tan(e/2 + (f*x)/2)*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d))/(2

```
*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))*((c
 + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a
*c^4*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11
*d^2)) + (((8*tan(e/2 + (f*x)/2)*(4*a^2*c^10 + 8*a^2*d^10 + 4*b^2*c^10 - 8*
a^2*c*d^9 - 8*a^2*c^9*d - 32*a^2*c^2*d^8 + 32*a^2*c^3*d^7 + 57*a^2*c^4*d^6
- 48*a^2*c^5*d^5 - 52*a^2*c^6*d^4 + 32*a^2*c^7*d^3 + 24*a^2*c^8*d^2 + b^2*c
^6*d^4 + 4*b^2*c^8*d^2 - 24*a*b*c^9*d - 4*a*b*c^3*d^7 + 2*a*b*c^5*d^5 + 8*a
*b*c^7*d^3))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3
*c^8*d^3 - 3*c^9*d^2) - (((8*(4*a*c^15 + 4*b*c^15 - 4*a*c^6*d^9 + 2*a*c^7*d
^8 + 18*a*c^8*d^7 - 4*a*c^9*d^6 - 36*a*c^10*d^5 + 6*a*c^11*d^4 + 34*a*c^12*
d^3 - 8*a*c^13*d^2 - 2*b*c^8*d^7 + 2*b*c^9*d^6 + 6*b*c^12*d^3 - 6*b*c^13*d^
2 - 12*a*c^14*d - 4*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d
^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (4*tan(e/2 + (f*x)/2)*((c + d)^
5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d
)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^
6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^1
0 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*
d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5
*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 - 6*a*c^4*d)
)/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))
*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 + b*c^3*d^2 -
 6*a*c^4*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*
c^11*d^2))))*((c + d)^5*(c - d)^5)^(1/2)*(2*b*c^5 - 2*a*d^5 + 5*a*c^2*d^3 +
 b*c^3*d^2 - 6*a*c^4*d)*1i)/(f*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 +
10*c^9*d^4 - 5*c^11*d^2))
```

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

$$\int \frac{a + b\sec(e + fx)}{(c + d\sec(e + fx))^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))/(c+d*sec(f*x+e))**3,x)
```

```
[Out] Integral((a + b*sec(e + f*x))/(c + d*sec(e + f*x))**3, x)
```

3.192 $\int \frac{(a+b\sec(e+fx))^2}{(c+d\sec(e+fx))^2}\,dx$

Optimal. Leaf size=133

$$\frac{a^2x}{c^2}+\frac{(bc-ad)^2\sin(e+fx)}{cf\left(c^2-d^2\right)(c\cos(e+fx)+d)}+\frac{2(bc-ad)\left(2ac^2-ad^2-bcd\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^2f(c-d)^{3/2}(c+d)^{3/2}}$$

```
[Out] a^2*x/c^2+2*(-a*d+b*c)*(2*a*c^2-a*d^2-b*c*d)*arctanh((c-d)^(1/2)*tan(1/2*e+
1/2*f*x)/(c+d)^(1/2))/c^2/(c-d)^(3/2)/(c+d)^(3/2)/f+(-a*d+b*c)^2*sin(f*x+e)
/c/(c^2-d^2)/f/(d+c*cos(f*x+e))
```

Rubi [A] time = 0.28, antiderivative size = 133, 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 = {3941, 2790, 2735, 2659, 208}

$$\frac{a^2x}{c^2}+\frac{(bc-ad)^2\sin(e+fx)}{cf\left(c^2-d^2\right)(c\cos(e+fx)+d)}+\frac{2(bc-ad)\left(2ac^2-ad^2-bcd\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^2f(c-d)^{3/2}(c+d)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^2/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (a^2*x)/c^2 + (2*(b*c - a*d)*(2*a*c^2 - b*c*d - a*d^2)*ArcTanh[(Sqrt[c - d]
*Tan[(e + f*x)/2])/Sqrt[c + d]])/(c^2*(c - d)^(3/2)*(c + d)^(3/2)*f) + ((b*
c - a*d)^2*Sin[e + f*x])/(c*(c^2 - d^2)*f*(d + c*Cos[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2790

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
(f_.)*(x_)])^2, x_Symbol] :> -Simp[((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*Cos[e +
 f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 1)*(a^2 - b^2)), x] - Dist[1/
(b*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^(m + 1)*Simp[b*(m + 1)*(2
*b*c*d - a*(c^2 + d^2)) + (a^2*d^2 - 2*a*b*c*d*(m + 2) + b^2*(d^2*(m + 1) +
 c^2*(m + 2)))*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f}, x] &&
NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && LtQ[m, -1]
```

Rule 3941

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Int[((b + a*Sin[e + f*x])^m*(d + c*Sin[e + f
*x])^n)/Sin[e + f*x]^(m + n), x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && N
eQ[b*c - a*d, 0] && IntegerQ[m] && IntegerQ[n] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^2}{(c+d\sec(e+fx))^2}\,dx = \int \frac{(b+a\cos(e+fx))^2}{(d+c\cos(e+fx))^2}\,dx$$

$$= \frac{(bc-ad)^2\sin(e+fx)}{c\left(c^2-d^2\right)f(d+c\cos(e+fx))} - \frac{\int \frac{-c\left(2abc-\left(a^2+b^2\right)d\right)-a^2\left(c^2-d^2\right)\cos(e+fx)}{d+c\cos(e+fx)}\,dx}{c\left(c^2-d^2\right)}$$

$$= \frac{a^2x}{c^2} + \frac{(bc-ad)^2\sin(e+fx)}{c\left(c^2-d^2\right)f(d+c\cos(e+fx))} + \frac{\left(c^2\left(2abc-\left(a^2+b^2\right)d\right)-a^2d\left(c^2-d^2\right)\right)\int}{c^2\left(c^2-d^2\right)}$$

$$= \frac{a^2x}{c^2} + \frac{(bc-ad)^2\sin(e+fx)}{c\left(c^2-d^2\right)f(d+c\cos(e+fx))} + \frac{\left(2\left(c^2\left(2abc-\left(a^2+b^2\right)d\right)-a^2d\left(c^2-d^2\right)\right)\right.}{c^2\left(c^2\right.}$$

$$= \frac{a^2x}{c^2} + \frac{2(bc-ad)\left(2ac^2-bcd-ad^2\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^2(c-d)^{3/2}(c+d)^{3/2}f} + \frac{(bc-ad)^2\sin(}{c\left(c^2-d^2\right)f(d+c}$$

Mathematica [A] time = 0.79, size = 136, normalized size = 1.02

$$\frac{\frac{2\left(a^2\left(2c^2d-d^3\right)-2abc^3+b^2c^2d\right)\tanh^{-1}\left(\frac{(d-c)\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c^2-d^2}}\right)}{\left(c^2-d^2\right)^{3/2}}+a^2(e+fx)+\frac{c(bc-ad)^2\sin(e+fx)}{(c-d)(c+d)(c\cos(e+fx)+d)}}{c^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])^2/(c + d*Sec[e + f*x])^2,x]
```

```
[Out] (a^2*(e + f*x) + (2*(-2*a*b*c^3 + b^2*c^2*d + a^2*(2*c^2*d - d^3))*ArcTanh[
((-c + d)*Tan[(e + f*x)/2])/Sqrt[c^2 - d^2]])/(c^2 - d^2)^(3/2) + (c*(b*c -
 a*d)^2*Sin[e + f*x])/((c - d)*(c + d)*(d + c*Cos[e + f*x])))/(c^2*f)
```

fricas [B] time = 0.53, size = 671, normalized size = 5.05

$$\left[\frac{2\left(a^2c^5-2a^2c^3d^2+a^2cd^4\right)fx\cos\left(fx+e\right)+2\left(a^2c^4d-2a^2c^2d^3+a^2d^5\right)fx+\left(2abc^3d+a^2d^4-\left(2a^2+b^2\right)c^2d^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(a^2*c^5 - 2*a^2*c^3*d^2 + a^2*c*d^4)*f*x*cos(f*x + e) + 2*(a^2*c^4
*d - 2*a^2*c^2*d^3 + a^2*d^5)*f*x + (2*a*b*c^3*d + a^2*d^4 - (2*a^2 + b^2)*
c^2*d^2 + (2*a*b*c^4 + a^2*c*d^3 - (2*a^2 + b^2)*c^3*d)*cos(f*x + e))*sqrt(
c^2 - d^2)*log((2*c*d*cos(f*x + e) - (c^2 - 2*d^2)*cos(f*x + e)^2 + 2*sqrt(
c^2 - d^2)*(d*cos(f*x + e) + c)*sin(f*x + e) + 2*c^2 - d^2)/(c^2*cos(f*x +
e)^2 + 2*c*d*cos(f*x + e) + d^2)) + 2*(b^2*c^5 - 2*a*b*c^4*d + 2*a*b*c^2*d^
```

```
3 - a^2*c*d^4 + (a^2 - b^2)*c^3*d^2)*sin(f*x + e))/((c^7 - 2*c^5*d^2 + c^3*
d^4)*f*cos(f*x + e) + (c^6*d - 2*c^4*d^3 + c^2*d^5)*f), ((a^2*c^5 - 2*a^2*c
^3*d^2 + a^2*c*d^4)*f*x*cos(f*x + e) + (a^2*c^4*d - 2*a^2*c^2*d^3 + a^2*d^5
)*f*x + (2*a*b*c^3*d + a^2*d^4 - (2*a^2 + b^2)*c^2*d^2 + (2*a*b*c^4 + a^2*c
*d^3 - (2*a^2 + b^2)*c^3*d)*cos(f*x + e))*sqrt(-c^2 + d^2)*arctan(-sqrt(-c^
2 + d^2)*(d*cos(f*x + e) + c)/((c^2 - d^2)*sin(f*x + e))) + (b^2*c^5 - 2*a*
b*c^4*d + 2*a*b*c^2*d^3 - a^2*c*d^4 + (a^2 - b^2)*c^3*d^2)*sin(f*x + e))/((
c^7 - 2*c^5*d^2 + c^3*d^4)*f*cos(f*x + e) + (c^6*d - 2*c^4*d^3 + c^2*d^5)*f
)]
```

giac [**A**] time = 0.30, size = 246, normalized size = 1.85

$$\frac{\frac{(fx+e)a^2}{c^2}+\frac{2\left(2\,abc^3-2\,a^2c^2d-b^2c^2d+a^2d^3\right)\left(\pi\left\lfloor\frac{fx+e}{2\,\pi}+\frac{1}{2}\right\rfloor\operatorname{sgn}(-2\,c+2\,d)+\arctan\left(-\frac{c\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-d\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)}{\sqrt{-c^2+d^2}}\right)\right)}{\left(c^4-c^2d^2\right)\sqrt{-c^2+d^2}}-\frac{2\left(b^2c^2\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-2\,ab\cdots\right.}{\left(c^3-cd^2\right)\left(c\tan\left(\frac{1}{2}\,f\cdots\right.\right.}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] ((f*x + e)*a^2/c^2 + 2*(2*a*b*c^3 - 2*a^2*c^2*d - b^2*c^2*d + a^2*d^3)*(pi*
floor(1/2*(f*x + e)/pi + 1/2)*sgn(-2*c + 2*d) + arctan(-(c*tan(1/2*f*x + 1/
2*e) - d*tan(1/2*f*x + 1/2*e))/sqrt(-c^2 + d^2)))/((c^4 - c^2*d^2)*sqrt(-c^
2 + d^2)) - 2*(b^2*c^2*tan(1/2*f*x + 1/2*e) - 2*a*b*c*d*tan(1/2*f*x + 1/2*e
) + a^2*d^2*tan(1/2*f*x + 1/2*e))/((c^3 - c*d^2)*(c*tan(1/2*f*x + 1/2*e)^2
- d*tan(1/2*f*x + 1/2*e)^2 - c - d)))/f
```

maple [**B**] time = 0.78, size = 462, normalized size = 3.47

$$-\frac{2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)a^2d^2}{fc\left(c^2-d^2\right)\left(\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)c-\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)d-c-d\right)}+\frac{4\tan\left(\frac{e}{2}+\frac{fx}{2}\right)abd}{f\left(c^2-d^2\right)\left(\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right)\right)c-\left(\tan^2\left(\frac{e}{2}+\frac{fx}{2}\right.\right.\right.\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^2,x)
```

```
[Out] -2/f/c/(c^2-d^2)*tan(1/2*e+1/2*f*x)/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f
*x)^2*d-c-d)*a^2*d^2+4/f/(c^2-d^2)*tan(1/2*e+1/2*f*x)/(tan(1/2*e+1/2*f*x)^2
*c-tan(1/2*e+1/2*f*x)^2*d-c-d)*a*b*d-2/f*c/(c^2-d^2)*tan(1/2*e+1/2*f*x)/(ta
n(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)*b^2-4/f/(c+d)/(c-d)/((c+d)
*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^2*d+2
/f/c^2/(c+d)/(c-d)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c
+d)*(c-d))^(1/2))*a^2*d^3+4/f*c/(c+d)/(c-d)/((c+d)*(c-d))^(1/2)*arctanh(tan
(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*b-2/f/(c+d)/(c-d)/((c+d)*(c-d)
)^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*b^2*d+2/f*a^2
/c^2*arctan(tan(1/2*e+1/2*f*x))
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [B] time = 10.20, size = 4934, normalized size = 37.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^2/(c + d/cos(e + f*x))^2,x)
```

```
[Out] (2*a^2*atan(((a^2*((32*tan(e/2 + (f*x)/2)*(a^4*c^6 + 2*a^4*d^6 - 2*a^4*c*d^
5 - 2*a^4*c^5*d + 4*a^2*b^2*c^6 - 5*a^4*c^2*d^4 + 4*a^4*c^3*d^3 + 3*a^4*c^4
*d^2 + b^4*c^4*d^2 + 4*a^3*b*c^3*d^3 - 2*a^2*b^2*c^2*d^4 + 4*a^2*b^2*c^4*d^
2 - 4*a*b^3*c^5*d - 8*a^3*b*c^5*d))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2) + (a^
2*((32*(2*a^2*c^8*d - a^2*c^9 + b^2*c^8*d + a^2*c^4*d^5 - 3*a^2*c^6*d^3 + a
^2*c^7*d^2 + b^2*c^5*d^4 - b^2*c^6*d^3 - b^2*c^7*d^2 - 2*a*b*c^9 + 2*a*b*c^
8*d - 2*a*b*c^6*d^3 + 2*a*b*c^7*d^2))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) - (
a^2*tan(e/2 + (f*x)/2)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7
*d^3 - 2*c^8*d^2)*32i)/(c^2*(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i)/c^2))/c
^2 + (a^2*((32*tan(e/2 + (f*x)/2)*(a^4*c^6 + 2*a^4*d^6 - 2*a^4*c*d^5 - 2*a^
4*c^5*d + 4*a^2*b^2*c^6 - 5*a^4*c^2*d^4 + 4*a^4*c^3*d^3 + 3*a^4*c^4*d^2 + b
^4*c^4*d^2 + 4*a^3*b*c^3*d^3 - 2*a^2*b^2*c^2*d^4 + 4*a^2*b^2*c^4*d^2 - 4*a*
b^3*c^5*d - 8*a^3*b*c^5*d))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2) - (a^2*((32*(
2*a^2*c^8*d - a^2*c^9 + b^2*c^8*d + a^2*c^4*d^5 - 3*a^2*c^6*d^3 + a^2*c^7*d
^2 + b^2*c^5*d^4 - b^2*c^6*d^3 - b^2*c^7*d^2 - 2*a*b*c^9 + 2*a*b*c^8*d - 2*
a*b*c^6*d^3 + 2*a*b*c^7*d^2))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (a^2*tan(
e/2 + (f*x)/2)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2
*c^8*d^2)*32i)/(c^2*(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i)/c^2))/c^2)/((64
*(a^6*d^5 - 2*a^5*b*c^5 - a^6*c*d^4 + 2*a^6*c^4*d + 4*a^4*b^2*c^5 - 3*a^6*c
^2*d^3 + 2*a^6*c^3*d^2 - 4*a^3*b^3*c^4*d - a^4*b^2*c*d^4 + a^4*b^2*c^4*d +
2*a^5*b*c^2*d^3 + 2*a^5*b*c^3*d^2 + a^2*b^4*c^3*d^2 - a^4*b^2*c^2*d^3 + 3*a
^4*b^2*c^3*d^2 - 6*a^5*b*c^4*d))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (a^2*(
(32*tan(e/2 + (f*x)/2)*(a^4*c^6 + 2*a^4*d^6 - 2*a^4*c*d^5 - 2*a^4*c^5*d + 4
*a^2*b^2*c^6 - 5*a^4*c^2*d^4 + 4*a^4*c^3*d^3 + 3*a^4*c^4*d^2 + b^4*c^4*d^2
+ 4*a^3*b*c^3*d^3 - 2*a^2*b^2*c^2*d^4 + 4*a^2*b^2*c^4*d^2 - 4*a*b^3*c^5*d -
 8*a^3*b*c^5*d))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2) + (a^2*((32*(2*a^2*c^8*d
 - a^2*c^9 + b^2*c^8*d + a^2*c^4*d^5 - 3*a^2*c^6*d^3 + a^2*c^7*d^2 + b^2*c^
5*d^4 - b^2*c^6*d^3 - b^2*c^7*d^2 - 2*a*b*c^9 + 2*a*b*c^8*d - 2*a*b*c^6*d^3
 + 2*a*b*c^7*d^2))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) - (a^2*tan(e/2 + (f*x)
/2)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2*c^8*d^2)*3
2i)/(c^2*(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i)/c^2)*1i)/c^2 - (a^2*((32*t
an(e/2 + (f*x)/2)*(a^4*c^6 + 2*a^4*d^6 - 2*a^4*c*d^5 - 2*a^4*c^5*d + 4*a^2*
b^2*c^6 - 5*a^4*c^2*d^4 + 4*a^4*c^3*d^3 + 3*a^4*c^4*d^2 + b^4*c^4*d^2 + 4*a
^3*b*c^3*d^3 - 2*a^2*b^2*c^2*d^4 + 4*a^2*b^2*c^4*d^2 - 4*a*b^3*c^5*d - 8*a^
3*b*c^5*d))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2) - (a^2*((32*(2*a^2*c^8*d - a^
2*c^9 + b^2*c^8*d + a^2*c^4*d^5 - 3*a^2*c^6*d^3 + a^2*c^7*d^2 + b^2*c^5*d^4
 - b^2*c^6*d^3 - b^2*c^7*d^2 - 2*a*b*c^9 + 2*a*b*c^8*d - 2*a*b*c^6*d^3 + 2*
a*b*c^7*d^2))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (a^2*tan(e/2 + (f*x)/2)*(
2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2*c^8*d^2)*32i)/(
c^2*(c^4*d + c^5 - c^2*d^3 - c^3*d^2)))*1i)/c^2)*1i)/c^2)))/(c^2*f) + (atan
((((a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*((32*tan(e/2 + (f*x)/2)*(a^4*c^6
 + 2*a^4*d^6 - 2*a^4*c*d^5 - 2*a^4*c^5*d + 4*a^2*b^2*c^6 - 5*a^4*c^2*d^4 +
4*a^4*c^3*d^3 + 3*a^4*c^4*d^2 + b^4*c^4*d^2 + 4*a^3*b*c^3*d^3 - 2*a^2*b^2*c
^2*d^4 + 4*a^2*b^2*c^4*d^2 - 4*a*b^3*c^5*d - 8*a^3*b*c^5*d))/(c^4*d + c^5 -
 c^2*d^3 - c^3*d^2) + (((32*(2*a^2*c^8*d - a^2*c^9 + b^2*c^8*d + a^2*c^4*d^
5 - 3*a^2*c^6*d^3 + a^2*c^7*d^2 + b^2*c^5*d^4 - b^2*c^6*d^3 - b^2*c^7*d^2 -
 2*a*b*c^9 + 2*a*b*c^8*d - 2*a*b*c^6*d^3 + 2*a*b*c^7*d^2))/(c^5*d + c^6 - c
^3*d^3 - c^4*d^2) - (32*tan(e/2 + (f*x)/2)*(a*d - b*c)*((c + d)^3*(c - d)^3
)^(1/2)*(a*d^2 - 2*a*c^2 + b*c*d)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*
d^4 - 4*c^7*d^3 - 2*c^8*d^2))/((c^4*d + c^5 - c^2*d^3 - c^3*d^2)*(c^8 - c^2
```

```
*d^6 + 3*c^4*d^4 - 3*c^6*d^2)))*(a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*(a*
d^2 - 2*a*c^2 + b*c*d))/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))*(a*d^2 - 2
*a*c^2 + b*c*d)*1i)/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2) + ((a*d - b*c)*
((c + d)^3*(c - d)^3)^(1/2)*((32*tan(e/2 + (f*x)/2)*(a^4*c^6 + 2*a^4*d^6 -
2*a^4*c*d^5 - 2*a^4*c^5*d + 4*a^2*b^2*c^6 - 5*a^4*c^2*d^4 + 4*a^4*c^3*d^3 +
 3*a^4*c^4*d^2 + b^4*c^4*d^2 + 4*a^3*b*c^3*d^3 - 2*a^2*b^2*c^2*d^4 + 4*a^2*
b^2*c^4*d^2 - 4*a*b^3*c^5*d - 8*a^3*b*c^5*d))/(c^4*d + c^5 - c^2*d^3 - c^3*
d^2) - (((32*(2*a^2*c^8*d - a^2*c^9 + b^2*c^8*d + a^2*c^4*d^5 - 3*a^2*c^6*d
^3 + a^2*c^7*d^2 + b^2*c^5*d^4 - b^2*c^6*d^3 - b^2*c^7*d^2 - 2*a*b*c^9 + 2*
a*b*c^8*d - 2*a*b*c^6*d^3 + 2*a*b*c^7*d^2))/(c^5*d + c^6 - c^3*d^3 - c^4*d^
2) + (32*tan(e/2 + (f*x)/2)*(a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^2
- 2*a*c^2 + b*c*d)*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3
 - 2*c^8*d^2))/((c^4*d + c^5 - c^2*d^3 - c^3*d^2)*(c^8 - c^2*d^6 + 3*c^4*d^
4 - 3*c^6*d^2)))*(a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^2 - 2*a*c^2 +
 b*c*d))/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))*(a*d^2 - 2*a*c^2 + b*c*d)
*1i)/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))/((64*(a^6*d^5 - 2*a^5*b*c^5 -
 a^6*c*d^4 + 2*a^6*c^4*d + 4*a^4*b^2*c^5 - 3*a^6*c^2*d^3 + 2*a^6*c^3*d^2 -
4*a^3*b^3*c^4*d - a^4*b^2*c*d^4 + a^4*b^2*c^4*d + 2*a^5*b*c^2*d^3 + 2*a^5*b
*c^3*d^2 + a^2*b^4*c^3*d^2 - a^4*b^2*c^2*d^3 + 3*a^4*b^2*c^3*d^2 - 6*a^5*b*
c^4*d))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + ((a*d - b*c)*((c + d)^3*(c - d)
^3)^(1/2)*((32*tan(e/2 + (f*x)/2)*(a^4*c^6 + 2*a^4*d^6 - 2*a^4*c*d^5 - 2*a^
4*c^5*d + 4*a^2*b^2*c^6 - 5*a^4*c^2*d^4 + 4*a^4*c^3*d^3 + 3*a^4*c^4*d^2 + b
^4*c^4*d^2 + 4*a^3*b*c^3*d^3 - 2*a^2*b^2*c^2*d^4 + 4*a^2*b^2*c^4*d^2 - 4*a*
b^3*c^5*d - 8*a^3*b*c^5*d))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2) + (((32*(2*a^
2*c^8*d - a^2*c^9 + b^2*c^8*d + a^2*c^4*d^5 - 3*a^2*c^6*d^3 + a^2*c^7*d^2 +
 b^2*c^5*d^4 - b^2*c^6*d^3 - b^2*c^7*d^2 - 2*a*b*c^9 + 2*a*b*c^8*d - 2*a*b*
c^6*d^3 + 2*a*b*c^7*d^2))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) - (32*tan(e/2 +
 (f*x)/2)*(a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^2 - 2*a*c^2 + b*c*d)
*(2*c^9*d - 2*c^4*d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2*c^8*d^2))/((c
^4*d + c^5 - c^2*d^3 - c^3*d^2)*(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2)))*(
a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^2 - 2*a*c^2 + b*c*d))/(c^8 - c^
2*d^6 + 3*c^4*d^4 - 3*c^6*d^2))*(a*d^2 - 2*a*c^2 + b*c*d))/(c^8 - c^2*d^6 +
 3*c^4*d^4 - 3*c^6*d^2) - ((a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*((32*tan
(e/2 + (f*x)/2)*(a^4*c^6 + 2*a^4*d^6 - 2*a^4*c*d^5 - 2*a^4*c^5*d + 4*a^2*b^
2*c^6 - 5*a^4*c^2*d^4 + 4*a^4*c^3*d^3 + 3*a^4*c^4*d^2 + b^4*c^4*d^2 + 4*a^3
*b*c^3*d^3 - 2*a^2*b^2*c^2*d^4 + 4*a^2*b^2*c^4*d^2 - 4*a*b^3*c^5*d - 8*a^3*
b*c^5*d))/(c^4*d + c^5 - c^2*d^3 - c^3*d^2) - (((32*(2*a^2*c^8*d - a^2*c^9
+ b^2*c^8*d + a^2*c^4*d^5 - 3*a^2*c^6*d^3 + a^2*c^7*d^2 + b^2*c^5*d^4 - b^2
*c^6*d^3 - b^2*c^7*d^2 - 2*a*b*c^9 + 2*a*b*c^8*d - 2*a*b*c^6*d^3 + 2*a*b*c^
7*d^2))/(c^5*d + c^6 - c^3*d^3 - c^4*d^2) + (32*tan(e/2 + (f*x)/2)*(a*d - b
*c)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^2 - 2*a*c^2 + b*c*d)*(2*c^9*d - 2*c^4*
d^6 + 2*c^5*d^5 + 4*c^6*d^4 - 4*c^7*d^3 - 2*c^8*d^2))/((c^4*d + c^5 - c^2*d
^3 - c^3*d^2)*(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2)))*(a*d - b*c)*((c + d
)^3*(c - d)^3)^(1/2)*(a*d^2 - 2*a*c^2 + b*c*d))/(c^8 - c^2*d^6 + 3*c^4*d^4
- 3*c^6*d^2))*(a*d^2 - 2*a*c^2 + b*c*d))/(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6
*d^2)))*(a*d - b*c)*((c + d)^3*(c - d)^3)^(1/2)*(a*d^2 - 2*a*c^2 + b*c*d)*2
i)/(f*(c^8 - c^2*d^6 + 3*c^4*d^4 - 3*c^6*d^2)) - (2*tan(e/2 + (f*x)/2)*(a^2
*d^2 + b^2*c^2 - 2*a*b*c*d))/(f*(c + d)*(c*d - c^2)*(c + d - tan(e/2 + (f*x
)/2)^2*(c - d)))
```

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

$$\int \frac{\left(a + b\sec\left(e + fx\right)\right)^2}{\left(c + d\sec\left(e + fx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**2/(c+d*sec(f*x+e))**2,x)
```

```
[Out] Integral((a + b*sec(e + f*x))**2/(c + d*sec(e + f*x))**2, x)
```

3.193 $\int \frac{(a+b\sec(e+fx))^2}{(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=237

$$-\frac{\left(a^2\left(6c^4d-5c^2d^3+2d^5\right)-2abc^3\left(2c^2+d^2\right)+3b^2c^4d\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^3f(c-d)^{5/2}(c+d)^{5/2}}+\frac{a^2x}{c^3}-\frac{(bc-ad)\left(3ad\left(2c^2-d^2\right.\right.}{2c^2f\left(c^2-d^2\right)}$$

```
[Out] a^2*x/c^3-(3*b^2*c^4*d-2*a*b*c^3*(2*c^2+d^2)+a^2*(6*c^4*d-5*c^2*d^3+2*d^5))
*arctanh((c-d)^(1/2)*tan(1/2*e+1/2*f*x)/(c+d)^(1/2))/c^3/(c-d)^(5/2)/(c+d)^
(5/2)/f-1/2*d*(-a*d+b*c)^2*sin(f*x+e)/c^2/(c^2-d^2)/f/(d+c*cos(f*x+e))^2-1/
2*(-a*d+b*c)*(3*a*d*(2*c^2-d^2)-b*c*(2*c^2+d^2))*sin(f*x+e)/c^2/(c^2-d^2)^2
/f/(d+c*cos(f*x+e))
```

Rubi [A] time = 0.80, antiderivative size = 237, 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 = {3941, 2988, 3021, 2735, 2659, 208}

$$-\frac{\left(a^2\left(-5c^2d^3+6c^4d+2d^5\right)-2abc^3\left(2c^2+d^2\right)+3b^2c^4d\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^3f(c-d)^{5/2}(c+d)^{5/2}}+\frac{a^2x}{c^3}-\frac{(bc-ad)\left(3ad\left(2c^2-\right.\right.}{2c^2f\left(c^2-d^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^2/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (a^2*x)/c^3 - ((3*b^2*c^4*d - 2*a*b*c^3*(2*c^2 + d^2) + a^2*(6*c^4*d - 5*c^
2*d^3 + 2*d^5))*ArcTanh[(Sqrt[c - d]*Tan[(e + f*x)/2])/Sqrt[c + d]])/(c^3*(
c - d)^(5/2)*(c + d)^(5/2)*f) - (d*(b*c - a*d)^2*Sin[e + f*x])/(2*c^2*(c^2
- d^2)*f*(d + c*Cos[e + f*x])^2) - ((b*c - a*d)*(3*a*d*(2*c^2 - d^2) - b*c*
(2*c^2 + d^2))*Sin[e + f*x])/(2*c^2*(c^2 - d^2)^2*f*(d + c*Cos[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2988

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2*((A_.) + (B_.)*sin[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> Simp[
((B*c - A*d)*(b*c - a*d)^2*Cos[e + f*x]*(c + d*Sin[e + f*x])^(n + 1))/(f*d^
2*(n + 1)*(c^2 - d^2)), x] - Dist[1/(d^2*(n + 1)*(c^2 - d^2)), Int[(c + d*S
in[e + f*x])^(n + 1)*Simp[d*(n + 1)*(B*(b*c - a*d)^2 - A*d*(a^2*c + b^2*c -
```

```
 2*a*b*d)) - ((B*c - A*d)*(a^2*d^2*(n + 2) + b^2*(c^2 + d^2*(n + 1))) + 2*a
*b*d*(A*c*d*(n + 2) - B*(c^2 + d^2*(n + 1))))*Sin[e + f*x] - b^2*B*d*(n + 1
)*(c^2 - d^2)*Sin[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B},
 x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && LtQ[n
, -1]
```

Rule 3021

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((A*b^2
 - a*b*B + a^2*C)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 1)*(
a^2 - b^2)), x] + Dist[1/(b*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*Simp[b*(a*A - b*B + a*C)*(m + 1) - (A*b^2 - a*b*B + a^2*C + b*(A*b
- a*B + b*C)*(m + 1))*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
C}, x] && LtQ[m, -1] && NeQ[a^2 - b^2, 0]
```

Rule 3941

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Int[((b + a*Sin[e + f*x])^m*(d + c*Sin[e + f
*x])^n)/Sin[e + f*x]^(m + n), x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && N
eQ[b*c - a*d, 0] && IntegerQ[m] && IntegerQ[n] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^2}{(c+d\sec(e+fx))^3}\,dx = \int \frac{\cos(e+fx)(b+a\cos(e+fx))^2}{(d+c\cos(e+fx))^3}\,dx$$

$$= -\frac{d(bc-ad)^2\sin(e+fx)}{2c^2\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} - \frac{\int \frac{-2c(bc-ad)^2+\left(b^2c^2d-2abc\left(2c^2-d^2\right)+a^2\left(2c^2d-d^3\right)\right)\cos\ldots}{(d+c\cos(e+fx))^2}}{2c^2\left(c^2-d^2\right)\ldots}$$

$$= -\frac{d(bc-ad)^2\sin(e+fx)}{2c^2\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} - \frac{(bc-ad)\left(3ad\left(2c^2-d^2\right)-bc\left(2c^2+d^2\right)\right)\ldots}{2c^2\left(c^2-d^2\right)^2 f(d+c\cos(e+fx\ldots}$$

$$= \frac{a^2x}{c^3} - \frac{d(bc-ad)^2\sin(e+fx)}{2c^2\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} - \frac{(bc-ad)\left(3ad\left(2c^2-d^2\right)-bc\left(2c^2+\ldots\right.\right.}{2c^2\left(c^2-d^2\right)^2 f(d+c\cos(e\ldots}$$

$$= \frac{a^2x}{c^3} - \frac{d(bc-ad)^2\sin(e+fx)}{2c^2\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} - \frac{(bc-ad)\left(3ad\left(2c^2-d^2\right)-bc\left(2c^2+\ldots\right.\right.}{2c^2\left(c^2-d^2\right)^2 f(d+c\cos(e\ldots}$$

$$= \frac{a^2x}{c^3} + \frac{\left(4abc^5-6a^2c^4d-3b^2c^4d+2abc^3d^2+5a^2c^2d^3-2a^2d^5\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\ldots\right)}{\sqrt{c+\ldots}}\right.}{c^3(c-d)^{5/2}(c+d)^{5/2}f}$$

Mathematica [B] time = 2.04, size = 493, normalized size = 2.08

$$\frac{\sec(e+fx)(a+b\sec(e+fx))^2(c\cos(e+fx)+d)\left(\frac{4\left(a^2\left(6c^4d-5c^2d^3+2d^5\right)-2abc^3\left(2c^2+d^2\right)+3b^2c^4d\right)(c\cos(e+fx)+d)^2\tanh^{-1}\left(\frac{(d-\ldots}{\ldots}\right.}{\left(c^2-d^2\right)^{5/2}}\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])^2/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] ((d + c*Cos[e + f*x])*Sec[e + f*x]*(a + b*Sec[e + f*x])^2*((4*(3*b^2*c^4*d
- 2*a*b*c^3*(2*c^2 + d^2) + a^2*(6*c^4*d - 5*c^2*d^3 + 2*d^5))*ArcTanh[((-c
 + d)*Tan[(e + f*x)/2])/Sqrt[c^2 - d^2]]*(d + c*Cos[e + f*x])^2)/(c^2 - d^2
)^(5/2) + (2*a^2*c^6*e - 6*a^2*c^2*d^4*e + 4*a^2*d^6*e + 2*a^2*c^6*f*x - 6*
a^2*c^2*d^4*f*x + 4*a^2*d^6*f*x + 8*a^2*c*d*(c^2 - d^2)^2*(e + f*x)*Cos[e +
 f*x] + 2*a^2*c^2*(c^2 - d^2)^2*(e + f*x)*Cos[2*(e + f*x)] + 2*b^2*c^5*d*Si
n[e + f*x] - 12*a*b*c^4*d^2*Sin[e + f*x] + 10*a^2*c^3*d^3*Sin[e + f*x] + 4*
b^2*c^3*d^3*Sin[e + f*x] - 4*a^2*c*d^5*Sin[e + f*x] + 2*b^2*c^6*Sin[2*(e +
f*x)] - 8*a*b*c^5*d*Sin[2*(e + f*x)] + 6*a^2*c^4*d^2*Sin[2*(e + f*x)] + b^2
*c^4*d^2*Sin[2*(e + f*x)] + 2*a*b*c^3*d^3*Sin[2*(e + f*x)] - 3*a^2*c^2*d^4*
Sin[2*(e + f*x)])/(c^2 - d^2)^2))/(4*c^3*f*(b + a*Cos[e + f*x])^2*(c + d*Se
c[e + f*x])^3)
```

fricas [B] time = 0.58, size = 1409, normalized size = 5.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/4*(4*(a^2*c^8 - 3*a^2*c^6*d^2 + 3*a^2*c^4*d^4 - a^2*c^2*d^6)*f*x*cos(f*x
 + e)^2 + 8*(a^2*c^7*d - 3*a^2*c^5*d^3 + 3*a^2*c^3*d^5 - a^2*c*d^7)*f*x*cos
(f*x + e) + 4*(a^2*c^6*d^2 - 3*a^2*c^4*d^4 + 3*a^2*c^2*d^6 - a^2*d^8)*f*x -
 (4*a*b*c^5*d^2 + 2*a*b*c^3*d^4 + 5*a^2*c^2*d^5 - 2*a^2*d^7 - 3*(2*a^2 + b^
2)*c^4*d^3 + (4*a*b*c^7 + 2*a*b*c^5*d^2 + 5*a^2*c^4*d^3 - 2*a^2*c^2*d^5 - 3
*(2*a^2 + b^2)*c^6*d)*cos(f*x + e)^2 + 2*(4*a*b*c^6*d + 2*a*b*c^4*d^3 + 5*a
^2*c^3*d^4 - 2*a^2*c*d^6 - 3*(2*a^2 + b^2)*c^5*d^2)*cos(f*x + e))*sqrt(c^2
- d^2)*log((2*c*d*cos(f*x + e) - (c^2 - 2*d^2)*cos(f*x + e)^2 - 2*sqrt(c^2
- d^2)*(d*cos(f*x + e) + c)*sin(f*x + e) + 2*c^2 - d^2)/(c^2*cos(f*x + e)^2
 + 2*c*d*cos(f*x + e) + d^2)) + 2*(b^2*c^7*d - 6*a*b*c^6*d^2 + 6*a*b*c^4*d^
4 + 2*a^2*c*d^7 + (5*a^2 + b^2)*c^5*d^3 - (7*a^2 + 2*b^2)*c^3*d^5 + (2*b^2*
c^8 - 8*a*b*c^7*d + 10*a*b*c^5*d^3 - 2*a*b*c^3*d^5 + 3*a^2*c^2*d^6 + (6*a^2
 - b^2)*c^6*d^2 - (9*a^2 + b^2)*c^4*d^4)*cos(f*x + e))*sin(f*x + e))/((c^11
 - 3*c^9*d^2 + 3*c^7*d^4 - c^5*d^6)*f*cos(f*x + e)^2 + 2*(c^10*d - 3*c^8*d^
3 + 3*c^6*d^5 - c^4*d^7)*f*cos(f*x + e) + (c^9*d^2 - 3*c^7*d^4 + 3*c^5*d^6
- c^3*d^8)*f), 1/2*(2*(a^2*c^8 - 3*a^2*c^6*d^2 + 3*a^2*c^4*d^4 - a^2*c^2*d^
6)*f*x*cos(f*x + e)^2 + 4*(a^2*c^7*d - 3*a^2*c^5*d^3 + 3*a^2*c^3*d^5 - a^2*
c*d^7)*f*x*cos(f*x + e) + 2*(a^2*c^6*d^2 - 3*a^2*c^4*d^4 + 3*a^2*c^2*d^6 -
a^2*d^8)*f*x + (4*a*b*c^5*d^2 + 2*a*b*c^3*d^4 + 5*a^2*c^2*d^5 - 2*a^2*d^7 -
 3*(2*a^2 + b^2)*c^4*d^3 + (4*a*b*c^7 + 2*a*b*c^5*d^2 + 5*a^2*c^4*d^3 - 2*a
^2*c^2*d^5 - 3*(2*a^2 + b^2)*c^6*d)*cos(f*x + e)^2 + 2*(4*a*b*c^6*d + 2*a*b
*c^4*d^3 + 5*a^2*c^3*d^4 - 2*a^2*c*d^6 - 3*(2*a^2 + b^2)*c^5*d^2)*cos(f*x +
 e))*sqrt(-c^2 + d^2)*arctan(-sqrt(-c^2 + d^2)*(d*cos(f*x + e) + c)/((c^2 -
 d^2)*sin(f*x + e))) + (b^2*c^7*d - 6*a*b*c^6*d^2 + 6*a*b*c^4*d^4 + 2*a^2*c
*d^7 + (5*a^2 + b^2)*c^5*d^3 - (7*a^2 + 2*b^2)*c^3*d^5 + (2*b^2*c^8 - 8*a*b
*c^7*d + 10*a*b*c^5*d^3 - 2*a*b*c^3*d^5 + 3*a^2*c^2*d^6 + (6*a^2 - b^2)*c^6
*d^2 - (9*a^2 + b^2)*c^4*d^4)*cos(f*x + e))*sin(f*x + e))/((c^11 - 3*c^9*d^
2 + 3*c^7*d^4 - c^5*d^6)*f*cos(f*x + e)^2 + 2*(c^10*d - 3*c^8*d^3 + 3*c^6*d
^5 - c^4*d^7)*f*cos(f*x + e) + (c^9*d^2 - 3*c^7*d^4 + 3*c^5*d^6 - c^3*d^8)*
f)]
```

giac [B] time = 0.46, size = 686, normalized size = 2.89

$$\frac{\left(4\,abc^5-6\,a^2c^4d-3\,b^2c^4d+2\,abc^3d^2+5\,a^2c^2d^3-2\,a^2d^5\right)\left(\pi\left\lfloor\frac{fx+e}{2\,\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(-2\,c+2\,d)+\arctan\left(-\frac{c\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)-d\tan\left(\frac{1}{2}\,fx+\frac{1}{2}\,e\right)}{\sqrt{-c^2+d^2}}\right)\right)}{\left(c^7-2\,c^5d^2+c^3d^4\right)\sqrt{-c^2+d^2}}+\frac{\left(fx+e\right)a^2}{c^3}-\frac{2\,b^2c^5\tan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^3,x, algorithm="giac")

[Out] ((4*a*b*c^5 - 6*a^2*c^4*d - 3*b^2*c^4*d + 2*a*b*c^3*d^2 + 5*a^2*c^2*d^3 - 2*a^2*d^5)*(pi*floor(1/2*(f*x + e)/pi + 1/2)*sgn(-2*c + 2*d) + arctan(-(c*tan(1/2*f*x + 1/2*e) - d*tan(1/2*f*x + 1/2*e))/sqrt(-c^2 + d^2)))/((c^7 - 2*c^5*d^2 + c^3*d^4)*sqrt(-c^2 + d^2)) + (f*x + e)*a^2/c^3 - (2*b^2*c^5*tan(1/2*f*x + 1/2*e)^3 - 8*a*b*c^4*d*tan(1/2*f*x + 1/2*e)^3 - b^2*c^4*d*tan(1/2*f*x + 1/2*e)^3 + 6*a^2*c^3*d^2*tan(1/2*f*x + 1/2*e)^3 + 6*a*b*c^3*d^2*tan(1/2*f*x + 1/2*e)^3 + b^2*c^3*d^2*tan(1/2*f*x + 1/2*e)^3 - 5*a^2*c^2*d^3*tan(1/2*f*x + 1/2*e)^3 + 2*a*b*c^2*d^3*tan(1/2*f*x + 1/2*e)^3 - 2*b^2*c^2*d^3*tan(1/2*f*x + 1/2*e)^3 - 3*a^2*c*d^4*tan(1/2*f*x + 1/2*e)^3 + 2*a^2*d^5*tan(1/2*f*x + 1/2*e)^3 - 2*b^2*c^5*tan(1/2*f*x + 1/2*e) + 8*a*b*c^4*d*tan(1/2*f*x + 1/2*e) - b^2*c^4*d*tan(1/2*f*x + 1/2*e) - 6*a^2*c^3*d^2*tan(1/2*f*x + 1/2*e) + 6*a*b*c^3*d^2*tan(1/2*f*x + 1/2*e) - b^2*c^3*d^2*tan(1/2*f*x + 1/2*e) - 5*a^2*c^2*d^3*tan(1/2*f*x + 1/2*e) - 2*a*b*c^2*d^3*tan(1/2*f*x + 1/2*e) - 2*b^2*c^2*d^3*tan(1/2*f*x + 1/2*e) + 3*a^2*c*d^4*tan(1/2*f*x + 1/2*e) + 2*a^2*d^5*tan(1/2*f*x + 1/2*e))/((c^6 - 2*c^4*d^2 + c^2*d^4)*(c*tan(1/2*f*x + 1/2*e)^2 - d*tan(1/2*f*x + 1/2*e)^2 - c - d)^2))/f

maple [B] time = 0.74, size = 1593, normalized size = 6.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^3,x)

[Out] -6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*d^2-1/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*d^3+2/f/c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*d^4+8/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a*b*d+2/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a*b*d^2-2/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^2-1/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^2*d-2/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^2*d^2+6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a^2*d^2-1/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a^2*d^3-2/f/c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a^2*d^4-8/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a*b*d+2/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a*b*d^2+2/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*b^2-1/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*b^2*d+2/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*b^2*d^2-6/f*c/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^2*d+5/f/c/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^2*d^3-2/f/c^3/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^2*d^5+4/f*c^2/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*b+2/f/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*b*d^2-3/f*c/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*b^2*d+2/f*a^2/c^3*arctan(tan(1/2*e+1/2*f*x))

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [B] time = 12.14, size = 8682, normalized size = 36.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^2/(c + d/cos(e + f*x))^3,x)
```

```
[Out] ((tan(e/2 + (f*x)/2)^3*(2*b^2*c^4 - 2*a^2*d^4 + a^2*c*d^3 + b^2*c^3*d + 6*a
^2*c^2*d^2 + 2*b^2*c^2*d^2 - 8*a*b*c^3*d - 2*a*b*c^2*d^2))/((c^2*d - c^3)*(
c + d)^2) - (tan(e/2 + (f*x)/2)*(2*a^2*d^4 - 2*b^2*c^4 + a^2*c*d^3 + b^2*c^
3*d - 6*a^2*c^2*d^2 - 2*b^2*c^2*d^2 + 8*a*b*c^3*d - 2*a*b*c^2*d^2))/((c + d
)*(c^4 - 2*c^3*d + c^2*d^2)))/(f*(2*c*d - tan(e/2 + (f*x)/2)^2*(2*c^2 - 2*d
^2) + tan(e/2 + (f*x)/2)^4*(c^2 - 2*c*d + d^2) + c^2 + d^2)) - (2*a^2*atan(
((a^2*((a^2*((8*(4*a^2*c^15 - 12*a^2*c^14*d - 6*b^2*c^14*d - 4*a^2*c^6*d^9
+ 2*a^2*c^7*d^8 + 18*a^2*c^8*d^7 - 4*a^2*c^9*d^6 - 36*a^2*c^10*d^5 + 6*a^2*
c^11*d^4 + 34*a^2*c^12*d^3 - 8*a^2*c^13*d^2 + 6*b^2*c^9*d^6 - 6*b^2*c^10*d^
5 - 12*b^2*c^11*d^4 + 12*b^2*c^12*d^3 + 6*b^2*c^13*d^2 + 8*a*b*c^15 - 8*a*b
*c^14*d - 4*a*b*c^8*d^7 + 4*a*b*c^9*d^6 + 12*a*b*c^12*d^3 - 12*a*b*c^13*d^2
))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3
- 3*c^11*d^2) - (a^2*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9
+ 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^
13*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^
5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*1i)/c^3 + (8*tan(e/2 + (f*x)/2)*(4
*a^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 - 8*a^4*c^9*d + 16*a^2*b^2*c^10 - 32*a
^4*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^4*d^6 - 48*a^4*c^5*d^5 - 52*a^4*c^6*
d^4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 + 9*b^4*c^8*d^2 - 12*a*b^3*c^7*d^3 -
8*a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*a^3*b*c^7*d^3 + 12*a^2*b^2*c^4*d^6 -
 26*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^2 - 24*a*b^3*c^9*d - 48*a^3*b*c^9*d)
)/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 -
3*c^9*d^2)))/c^3 - (a^2*((a^2*((8*(4*a^2*c^15 - 12*a^2*c^14*d - 6*b^2*c^14*
d - 4*a^2*c^6*d^9 + 2*a^2*c^7*d^8 + 18*a^2*c^8*d^7 - 4*a^2*c^9*d^6 - 36*a^2
*c^10*d^5 + 6*a^2*c^11*d^4 + 34*a^2*c^12*d^3 - 8*a^2*c^13*d^2 + 6*b^2*c^9*d
^6 - 6*b^2*c^10*d^5 - 12*b^2*c^11*d^4 + 12*b^2*c^12*d^3 + 6*b^2*c^13*d^2 +
8*a*b*c^15 - 8*a*b*c^14*d - 4*a*b*c^8*d^7 + 4*a*b*c^9*d^6 + 12*a*b*c^12*d^3
 - 12*a*b*c^13*d^2))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9
*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (a^2*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6
*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 3
2*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 -
c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*1i)/c^3 - (8*tan
(e/2 + (f*x)/2)*(4*a^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 - 8*a^4*c^9*d + 16*a
^2*b^2*c^10 - 32*a^4*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^4*d^6 - 48*a^4*c^5
*d^5 - 52*a^4*c^6*d^4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 + 9*b^4*c^8*d^2 - 1
2*a*b^3*c^7*d^3 - 8*a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*a^3*b*c^7*d^3 + 12
*a^2*b^2*c^4*d^6 - 26*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^2 - 24*a*b^3*c^9*d
 - 48*a^3*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*
d^4 - 3*c^8*d^3 - 3*c^9*d^2)))/c^3)/((a^2*((a^2*((8*(4*a^2*c^15 - 12*a^2*c^
14*d - 6*b^2*c^14*d - 4*a^2*c^6*d^9 + 2*a^2*c^7*d^8 + 18*a^2*c^8*d^7 - 4*a^
```

```
2*c^9*d^6 - 36*a^2*c^10*d^5 + 6*a^2*c^11*d^4 + 34*a^2*c^12*d^3 - 8*a^2*c^13
*d^2 + 6*b^2*c^9*d^6 - 6*b^2*c^10*d^5 - 12*b^2*c^11*d^4 + 12*b^2*c^12*d^3 +
 6*b^2*c^13*d^2 + 8*a*b*c^15 - 8*a*b*c^14*d - 4*a*b*c^8*d^7 + 4*a*b*c^9*d^6
 + 12*a*b*c^12*d^3 - 12*a*b*c^13*d^2))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 +
 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (a^2*tan(e/2 + (f*x)/2)
*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6
 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d +
 c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2))
)*1i)/c^3 + (8*tan(e/2 + (f*x)/2)*(4*a^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 -
8*a^4*c^9*d + 16*a^2*b^2*c^10 - 32*a^4*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^
4*d^6 - 48*a^4*c^5*d^5 - 52*a^4*c^6*d^4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 +
 9*b^4*c^8*d^2 - 12*a*b^3*c^7*d^3 - 8*a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*
a^3*b*c^7*d^3 + 12*a^2*b^2*c^4*d^6 - 26*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^
2 - 24*a*b^3*c^9*d - 48*a^3*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 +
3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2))*1i)/c^3 - (16*(4*a^6*d^9 -
8*a^5*b*c^9 - 2*a^6*c*d^8 + 12*a^6*c^8*d + 16*a^4*b^2*c^9 - 18*a^6*c^2*d^7
+ 13*a^6*c^3*d^6 + 36*a^6*c^4*d^5 - 26*a^6*c^5*d^4 - 34*a^6*c^6*d^3 + 24*a^
6*c^7*d^2 - 24*a^3*b^3*c^8*d + 6*a^4*b^2*c^8*d - 4*a^5*b*c^2*d^7 - 4*a^5*b*
c^3*d^6 + 4*a^5*b*c^4*d^5 + 4*a^5*b*c^6*d^3 + 12*a^5*b*c^7*d^2 + 9*a^2*b^4*
c^7*d^2 - 12*a^3*b^3*c^6*d^3 + 6*a^4*b^2*c^3*d^6 + 6*a^4*b^2*c^4*d^5 - 14*a
^4*b^2*c^5*d^4 - 12*a^4*b^2*c^6*d^3 + 46*a^4*b^2*c^7*d^2 - 40*a^5*b*c^8*d))
/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 -
3*c^11*d^2) + (a^2*((a^2*((8*(4*a^2*c^15 - 12*a^2*c^14*d - 6*b^2*c^14*d - 4
*a^2*c^6*d^9 + 2*a^2*c^7*d^8 + 18*a^2*c^8*d^7 - 4*a^2*c^9*d^6 - 36*a^2*c^10
*d^5 + 6*a^2*c^11*d^4 + 34*a^2*c^12*d^3 - 8*a^2*c^13*d^2 + 6*b^2*c^9*d^6 -
6*b^2*c^10*d^5 - 12*b^2*c^11*d^4 + 12*b^2*c^12*d^3 + 6*b^2*c^13*d^2 + 8*a*b
*c^15 - 8*a*b*c^14*d - 4*a*b*c^8*d^7 + 4*a*b*c^9*d^6 + 12*a*b*c^12*d^3 - 12
*a*b*c^13*d^2))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4
- 3*c^10*d^3 - 3*c^11*d^2) + (a^2*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6*d^10
 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^1
2*d^4 - 32*c^13*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 - c^5*d
^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*1i)/c^3 - (8*tan(e/2
+ (f*x)/2)*(4*a^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 - 8*a^4*c^9*d + 16*a^2*b^
2*c^10 - 32*a^4*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^4*d^6 - 48*a^4*c^5*d^5
- 52*a^4*c^6*d^4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 + 9*b^4*c^8*d^2 - 12*a*b
^3*c^7*d^3 - 8*a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*a^3*b*c^7*d^3 + 12*a^2*
b^2*c^4*d^6 - 26*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^2 - 24*a*b^3*c^9*d - 48
*a^3*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 -
 3*c^8*d^3 - 3*c^9*d^2))*1i)/c^3)))/(c^3*f) + (atan(((((8*tan(e/2 + (f*x)/2
)*(4*a^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 - 8*a^4*c^9*d + 16*a^2*b^2*c^10 -
32*a^4*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^4*d^6 - 48*a^4*c^5*d^5 - 52*a^4*
c^6*d^4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 + 9*b^4*c^8*d^2 - 12*a*b^3*c^7*d^
3 - 8*a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*a^3*b*c^7*d^3 + 12*a^2*b^2*c^4*d
^6 - 26*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^2 - 24*a*b^3*c^9*d - 48*a^3*b*c^
9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^
3 - 3*c^9*d^2) + (((c + d)^5*(c - d)^5)^(1/2)*((8*(4*a^2*c^15 - 12*a^2*c^14
*d - 6*b^2*c^14*d - 4*a^2*c^6*d^9 + 2*a^2*c^7*d^8 + 18*a^2*c^8*d^7 - 4*a^2*
c^9*d^6 - 36*a^2*c^10*d^5 + 6*a^2*c^11*d^4 + 34*a^2*c^12*d^3 - 8*a^2*c^13*d
^2 + 6*b^2*c^9*d^6 - 6*b^2*c^10*d^5 - 12*b^2*c^11*d^4 + 12*b^2*c^12*d^3 + 6
*b^2*c^13*d^2 + 8*a*b*c^15 - 8*a*b*c^14*d - 4*a*b*c^8*d^7 + 4*a*b*c^9*d^6 +
 12*a*b*c^12*d^3 - 12*a*b*c^13*d^2))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3
*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (4*tan(e/2 + (f*x)/2)*((c
 + d)^5*(c - d)^5)^(1/2)*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*a^2*c^2
*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c
^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3
 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5
*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c
^8*d^3 - 3*c^9*d^2)))*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*a^2*c^2*d^
3 - 4*a*b*c^5 - 2*a*b*c^3*d^2))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^
```

6 + 10*c^9*d^4 - 5*c^11*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*a^2*d^5 + 6*a
^2*c^4*d + 3*b^2*c^4*d - 5*a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2)*1i)/(2*
(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)) + (((
8*tan(e/2 + (f*x)/2)*(4*a^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 - 8*a^4*c^9*d +
16*a^2*b^2*c^10 - 32*a^4*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^4*d^6 - 48*a^
4*c^5*d^5 - 52*a^4*c^6*d^4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 + 9*b^4*c^8*d^
2 - 12*a*b^3*c^7*d^3 - 8*a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*a^3*b*c^7*d^3
+ 12*a^2*b^2*c^4*d^6 - 26*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^2 - 24*a*b^3*
c^9*d - 48*a^3*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3
*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) - (((c + d)^5*(c - d)^5)^(1/2)*((8*(4*a^2
*c^15 - 12*a^2*c^14*d - 6*b^2*c^14*d - 4*a^2*c^6*d^9 + 2*a^2*c^7*d^8 + 18*a
^2*c^8*d^7 - 4*a^2*c^9*d^6 - 36*a^2*c^10*d^5 + 6*a^2*c^11*d^4 + 34*a^2*c^12
*d^3 - 8*a^2*c^13*d^2 + 6*b^2*c^9*d^6 - 6*b^2*c^10*d^5 - 12*b^2*c^11*d^4 +
12*b^2*c^12*d^3 + 6*b^2*c^13*d^2 + 8*a*b*c^15 - 8*a*b*c^14*d - 4*a*b*c^8*d^
7 + 4*a*b*c^9*d^6 + 12*a*b*c^12*d^3 - 12*a*b*c^13*d^2))/(c^12*d + c^13 - c^
6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (4*tan
(e/2 + (f*x)/2)*((c + d)^5*(c - d)^5)^(1/2)*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^
2*c^4*d - 5*a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2)*(8*c^15*d - 8*c^6*d^10
+ 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^1
2*d^4 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d
^6 + 10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^
5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c
^4*d - 5*a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2))/(2*(c^13 - c^3*d^10 + 5*
c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))*((c + d)^5*(c - d)^5)^(1/
2)*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*a^2*c^2*d^3 - 4*a*b*c^5 - 2*a
*b*c^3*d^2)*1i)/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 -
5*c^11*d^2)))/((16*(4*a^6*d^9 - 8*a^5*b*c^9 - 2*a^6*c*d^8 + 12*a^6*c^8*d +
16*a^4*b^2*c^9 - 18*a^6*c^2*d^7 + 13*a^6*c^3*d^6 + 36*a^6*c^4*d^5 - 26*a^6
*c^5*d^4 - 34*a^6*c^6*d^3 + 24*a^6*c^7*d^2 - 24*a^3*b^3*c^8*d + 6*a^4*b^2*c
^8*d - 4*a^5*b*c^2*d^7 - 4*a^5*b*c^3*d^6 + 4*a^5*b*c^4*d^5 + 4*a^5*b*c^6*d^
3 + 12*a^5*b*c^7*d^2 + 9*a^2*b^4*c^7*d^2 - 12*a^3*b^3*c^6*d^3 + 6*a^4*b^2*c
^3*d^6 + 6*a^4*b^2*c^4*d^5 - 14*a^4*b^2*c^5*d^4 - 12*a^4*b^2*c^6*d^3 + 46*a
^4*b^2*c^7*d^2 - 40*a^5*b*c^8*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^
8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (((8*tan(e/2 + (f*x)/2)*(4*a
^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 - 8*a^4*c^9*d + 16*a^2*b^2*c^10 - 32*a^4
*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^4*d^6 - 48*a^4*c^5*d^5 - 52*a^4*c^6*d^
4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 + 9*b^4*c^8*d^2 - 12*a*b^3*c^7*d^3 - 8*
a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*a^3*b*c^7*d^3 + 12*a^2*b^2*c^4*d^6 - 2
6*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^2 - 24*a*b^3*c^9*d - 48*a^3*b*c^9*d))/
(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*
c^9*d^2) + (((c + d)^5*(c - d)^5)^(1/2)*((8*(4*a^2*c^15 - 12*a^2*c^14*d - 6
*b^2*c^14*d - 4*a^2*c^6*d^9 + 2*a^2*c^7*d^8 + 18*a^2*c^8*d^7 - 4*a^2*c^9*d^
6 - 36*a^2*c^10*d^5 + 6*a^2*c^11*d^4 + 34*a^2*c^12*d^3 - 8*a^2*c^13*d^2 + 6
*b^2*c^9*d^6 - 6*b^2*c^10*d^5 - 12*b^2*c^11*d^4 + 12*b^2*c^12*d^3 + 6*b^2*c
^13*d^2 + 8*a*b*c^15 - 8*a*b*c^14*d - 4*a*b*c^8*d^7 + 4*a*b*c^9*d^6 + 12*a*
b*c^12*d^3 - 12*a*b*c^13*d^2))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d
^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (4*tan(e/2 + (f*x)/2)*((c + d)^
5*(c - d)^5)^(1/2)*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*a^2*c^2*d^3 -
4*a*b*c^5 - 2*a*b*c^3*d^2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8
- 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c
^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*
d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3
- 3*c^9*d^2)))*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*a^2*c^2*d^3 - 4*
a*b*c^5 - 2*a*b*c^3*d^2))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10
*c^9*d^4 - 5*c^11*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*a^2*d^5 + 6*a^2*c^4
*d + 3*b^2*c^4*d - 5*a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2))/(2*(c^13 - c
^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)) + (((8*tan(e/2
+ (f*x)/2)*(4*a^4*c^10 + 8*a^4*d^10 - 8*a^4*c*d^9 - 8*a^4*c^9*d + 16*a^2*b
^2*c^10 - 32*a^4*c^2*d^8 + 32*a^4*c^3*d^7 + 57*a^4*c^4*d^6 - 48*a^4*c^5*d^5

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 - 52*a^4*c^6*d^4 + 32*a^4*c^7*d^3 + 24*a^4*c^8*d^2 + 9*b^4*c^8*d^2 - 12*a*
b^3*c^7*d^3 - 8*a^3*b*c^3*d^7 + 4*a^3*b*c^5*d^5 + 16*a^3*b*c^7*d^3 + 12*a^2
*b^2*c^4*d^6 - 26*a^2*b^2*c^6*d^4 + 52*a^2*b^2*c^8*d^2 - 24*a*b^3*c^9*d - 4
8*a^3*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4
- 3*c^8*d^3 - 3*c^9*d^2) - (((c + d)^5*(c - d)^5)^(1/2)*((8*(4*a^2*c^15 - 1
2*a^2*c^14*d - 6*b^2*c^14*d - 4*a^2*c^6*d^9 + 2*a^2*c^7*d^8 + 18*a^2*c^8*d^
7 - 4*a^2*c^9*d^6 - 36*a^2*c^10*d^5 + 6*a^2*c^11*d^4 + 34*a^2*c^12*d^3 - 8*
a^2*c^13*d^2 + 6*b^2*c^9*d^6 - 6*b^2*c^10*d^5 - 12*b^2*c^11*d^4 + 12*b^2*c^
12*d^3 + 6*b^2*c^13*d^2 + 8*a*b*c^15 - 8*a*b*c^14*d - 4*a*b*c^8*d^7 + 4*a*b
*c^9*d^6 + 12*a*b*c^12*d^3 - 12*a*b*c^13*d^2))/(c^12*d + c^13 - c^6*d^7 - c
^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (4*tan(e/2 + (f
*x)/2)*((c + d)^5*(c - d)^5)^(1/2)*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d -
 5*a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*
d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 3
2*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c
^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7
*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*
a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 -
 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(2*a^2
*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^
2))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)
)))*((c + d)^5*(c - d)^5)^(1/2)*(2*a^2*d^5 + 6*a^2*c^4*d + 3*b^2*c^4*d - 5*
a^2*c^2*d^3 - 4*a*b*c^5 - 2*a*b*c^3*d^2)*1i)/(f*(c^13 - c^3*d^10 + 5*c^5*d^
8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2))
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^2}{\left(c+d\sec\left(e+fx\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**2/(c+d*sec(f*x+e))**3,x)
```

```
[Out] Integral((a + b*sec(e + f*x))**2/(c + d*sec(e + f*x))**3, x)
```

3.194 $\int \frac{(a+b\sec(e+fx))^2}{(c+d\sec(e+fx))^4}\,dx$

Optimal. Leaf size=377

$$-\frac{\left(-a^2d^2\left(34c^4-28c^2d^2+9d^4\right)+2abcd\left(18c^4-5c^2d^2+2d^4\right)-\left(b^2\left(6c^6+10c^4d^2-c^2d^4\right)\right)\right)\sin(e+fx)}{6c^3f\left(c^2-d^2\right)^3(c\cos(e+fx)+d)}-\frac{\left(a^2\left(8c^6\right.\right.}{}$$

```
[Out] a^2*x/c^4-(b^2*c^4*d*(4*c^2+d^2)-a*b*(4*c^7+6*c^5*d^2)+a^2*(8*c^6*d-8*c^4*d
^3+7*c^2*d^5-2*d^7))*arctanh((c-d)^(1/2)*tan(1/2*e+1/2*f*x)/(c+d)^(1/2))/c^
4/(c-d)^(7/2)/(c+d)^(7/2)/f+1/3*d^2*(b+a*cos(f*x+e))^2*sin(f*x+e)/c/(c^2-d^
2)/f/(d+c*cos(f*x+e))^3-1/6*d*(-a*d+b*c)*(-8*a*c^2*d+3*a*d^3+6*b*c^3-b*c*d^
2)*sin(f*x+e)/c^3/(c^2-d^2)^2/f/(d+c*cos(f*x+e))^2-1/6*(2*a*b*c*d*(18*c^4-5
*c^2*d^2+2*d^4)-a^2*d^2*(34*c^4-28*c^2*d^2+9*d^4)-b^2*(6*c^6+10*c^4*d^2-c^2
*d^4))*sin(f*x+e)/c^3/(c^2-d^2)^3/f/(d+c*cos(f*x+e))
```

Rubi [A] time = 2.00, antiderivative size = 377, 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 = {3941, 3048, 3031, 3021, 2735, 2659, 208}

$$-\frac{\left(-a^2d^2\left(-28c^2d^2+34c^4+9d^4\right)+2abcd\left(-5c^2d^2+18c^4+2d^4\right)+b^2\left(-\left(10c^4d^2-c^2d^4+6c^6\right)\right)\right)\sin(e+fx)}{6c^3f\left(c^2-d^2\right)^3(c\cos(e+fx)+d)}-\frac{\left(a^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^2/(c + d*Sec[e + f*x])^4,x]
```

```
[Out] (a^2*x)/c^4 - ((b^2*c^4*d*(4*c^2 + d^2) - a*b*(4*c^7 + 6*c^5*d^2) + a^2*(8*
c^6*d - 8*c^4*d^3 + 7*c^2*d^5 - 2*d^7))*ArcTanh[(Sqrt[c - d]*Tan[(e + f*x)/
2])/Sqrt[c + d]])/(c^4*(c - d)^(7/2)*(c + d)^(7/2)*f) + (d^2*(b + a*Cos[e +
 f*x])^2*Sin[e + f*x])/(3*c*(c^2 - d^2)*f*(d + c*Cos[e + f*x])^3) - (d*(b*c
 - a*d)*(6*b*c^3 - 8*a*c^2*d - b*c*d^2 + 3*a*d^3)*Sin[e + f*x])/(6*c^3*(c^2
 - d^2)^2*f*(d + c*Cos[e + f*x])^2) - ((2*a*b*c*d*(18*c^4 - 5*c^2*d^2 + 2*d
^4) - a^2*d^2*(34*c^4 - 28*c^2*d^2 + 9*d^4) - b^2*(6*c^6 + 10*c^4*d^2 - c^2
*d^4))*Sin[e + f*x])/(6*c^3*(c^2 - d^2)^3*f*(d + c*Cos[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 3021

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((A*b^2
 - a*b*B + a^2*C)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 1)*(
a^2 - b^2)), x] + Dist[1/(b*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*Simp[b*(a*A - b*B + a*C)*(m + 1) - (A*b^2 - a*b*B + a^2*C + b*(A*b
- a*B + b*C)*(m + 1))*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
C}, x] && LtQ[m, -1] && NeQ[a^2 - b^2, 0]
```

Rule 3031

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(A*b^2 - a*b*B + a^2*C)*Cos[e
 + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b^2*f*(m + 1)*(a^2 - b^2)), x] - Dis
t[1/(b^2*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^(m + 1)*Simp[b*(m +
 1)*((b*B - a*C)*(b*c - a*d) - A*b*(a*c - b*d)) + (b*B*(a^2*d + b^2*d*(m +
1) - a*b*c*(m + 2)) + (b*c - a*d)*(A*b^2*(m + 2) + C*(a^2 + b^2*(m + 1))))*
Sin[e + f*x] - b*C*d*(m + 1)*(a^2 - b^2)*Sin[e + f*x]^2, x], x], x] /; Free
Q[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
 && LtQ[m, -1]
```

Rule 3048

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
-Simp[((c^2*C + A*d^2)*Cos[e + f*x]*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f
*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)
), Int[(a + b*Sin[e + f*x])^(m - 1)*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(
b*d*m + a*c*(n + 1)) + c*C*(b*c*m + a*d*(n + 1)) - (A*d*(a*d*(n + 2) - b*c*
(n + 1)) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] - b*(A*d
^2*(m + n + 2) + C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x]
/; FreeQ[{a, b, c, d, e, f, A, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2
, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3941

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Int[((b + a*Sin[e + f*x])^m*(d + c*Sin[e + f
*x])^n)/Sin[e + f*x]^(m + n), x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && N
eQ[b*c - a*d, 0] && IntegerQ[m] && IntegerQ[n] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^2}{(c+d\sec(e+fx))^4}\,dx = \int \frac{\cos^2(e+fx)(b+a\cos(e+fx))^2}{(d+c\cos(e+fx))^4}\,dx$$

$$= \frac{d^2(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} + \frac{\int \frac{(b+a\cos(e+fx))\left(-d(3bc-2ad)+\left(3bc^2-3acd-bd^2\right)\cos(e+fx}{(d+c\cos(e+fx))^3}}{3c\left(c^2-d^2\right)}$$

$$= \frac{d^2(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} - \frac{d(bc-ad)\left(6bc^3-8ac^2d-bcd^2+3ad^3\right)\sin(e+}{6c^3\left(c^2-d^2\right)^2f(d+c\cos(e+fx))^2}$$

$$= \frac{d^2(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} - \frac{d(bc-ad)\left(6bc^3-8ac^2d-bcd^2+3ad^3\right)\sin(e+}{6c^3\left(c^2-d^2\right)^2f(d+c\cos(e+fx))^2}$$

$$= \frac{a^2x}{c^4} + \frac{d^2(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} - \frac{d(bc-ad)\left(6bc^3-8ac^2d-bcd^2+3ad^3\right)}{6c^3\left(c^2-d^2\right)^2f(d+c\cos(e+f}$$

$$= \frac{a^2x}{c^4} + \frac{d^2(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} - \frac{d(bc-ad)\left(6bc^3-8ac^2d-bcd^2+3ad^3\right)}{6c^3\left(c^2-d^2\right)^2f(d+c\cos(e+f}$$

$$= \frac{a^2x}{c^4} + \frac{\left(4abc^7-8a^2c^6d-4b^2c^6d+6abc^5d^2+8a^2c^4d^3-b^2c^4d^3-7a^2c^2d^5+2a^2d^7\right)\text{t}}{c^4(c-d)^{7/2}(c+d)^{7/2}f}$$

Mathematica [A] time = 3.45, size = 438, normalized size = 1.16

$$\frac{\sec^2(e+fx)(a+b\sec(e+fx))^2(c\cos(e+fx)+d)\left(\frac{c\left(a^2d^2\left(36c^4-32c^2d^2+11d^4\right)-2abcd\left(18c^4-5c^2d^2+2d^4\right)+b^2\left(6c^6+10c^4d^2-c^2d^4\right)\right)\text{si}}{\left(c^2-d^2\right)^3}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])^2/(c + d*Sec[e + f*x])^4,x]
```

```
[Out] ((d + c*Cos[e + f*x])*Sec[e + f*x]^2*(a + b*Sec[e + f*x])^2*(6*a^2*(e + f*x
)*(d + c*Cos[e + f*x])^3 + (6*(b^2*c^4*d*(4*c^2 + d^2) - 2*a*b*c^5*(2*c^2 +
 3*d^2) + a^2*(8*c^6*d - 8*c^4*d^3 + 7*c^2*d^5 - 2*d^7))*ArcTanh[((-c + d)*
Tan[(e + f*x)/2])/Sqrt[c^2 - d^2]]*(d + c*Cos[e + f*x])^3)/(c^2 - d^2)^(7/2
) + (2*c*d^2*(b*c - a*d)^2*Sin[e + f*x])/(c^2 - d^2) - (c*d*(a^2*d^2*(12*c^
2 - 7*d^2) + b^2*(6*c^4 - c^2*d^2) + a*b*(-18*c^3*d + 8*c*d^3))*(d + c*Cos[
e + f*x])*Sin[e + f*x])/(c^2 - d^2)^2 + (c*(-2*a*b*c*d*(18*c^4 - 5*c^2*d^2
+ 2*d^4) + a^2*d^2*(36*c^4 - 32*c^2*d^2 + 11*d^4) + b^2*(6*c^6 + 10*c^4*d^2
 - c^2*d^4))*(d + c*Cos[e + f*x])^2*Sin[e + f*x])/(c^2 - d^2)^3))/(6*c^4*f*
(b + a*Cos[e + f*x])^2*(c + d*Sec[e + f*x])^4)
```

fricas [B] time = 0.73, size = 2362, normalized size = 6.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] [1/12*(12*(a^2*c^11 - 4*a^2*c^9*d^2 + 6*a^2*c^7*d^4 - 4*a^2*c^5*d^6 + a^2*c
^3*d^8)*f*x*cos(f*x + e)^3 + 36*(a^2*c^10*d - 4*a^2*c^8*d^3 + 6*a^2*c^6*d^5
 - 4*a^2*c^4*d^7 + a^2*c^2*d^9)*f*x*cos(f*x + e)^2 + 36*(a^2*c^9*d^2 - 4*a^
2*c^7*d^4 + 6*a^2*c^5*d^6 - 4*a^2*c^3*d^8 + a^2*c*d^10)*f*x*cos(f*x + e) +
12*(a^2*c^8*d^3 - 4*a^2*c^6*d^5 + 6*a^2*c^4*d^7 - 4*a^2*c^2*d^9 + a^2*d^11)
*f*x - 3*(4*a*b*c^7*d^3 + 6*a*b*c^5*d^5 - 7*a^2*c^2*d^8 + 2*a^2*d^10 - 4*(2
*a^2 + b^2)*c^6*d^4 + (8*a^2 - b^2)*c^4*d^6 + (4*a*b*c^10 + 6*a*b*c^8*d^2 -
 7*a^2*c^5*d^5 + 2*a^2*c^3*d^7 - 4*(2*a^2 + b^2)*c^9*d + (8*a^2 - b^2)*c^7*
d^3)*cos(f*x + e)^3 + 3*(4*a*b*c^9*d + 6*a*b*c^7*d^3 - 7*a^2*c^4*d^6 + 2*a^
2*c^2*d^8 - 4*(2*a^2 + b^2)*c^8*d^2 + (8*a^2 - b^2)*c^6*d^4)*cos(f*x + e)^2
 + 3*(4*a*b*c^8*d^2 + 6*a*b*c^6*d^4 - 7*a^2*c^3*d^7 + 2*a^2*c*d^9 - 4*(2*a^
2 + b^2)*c^7*d^3 + (8*a^2 - b^2)*c^5*d^5)*cos(f*x + e))*sqrt(c^2 - d^2)*log
((2*c*d*cos(f*x + e) - (c^2 - 2*d^2)*cos(f*x + e)^2 - 2*sqrt(c^2 - d^2)*(d*
cos(f*x + e) + c)*sin(f*x + e) + 2*c^2 - d^2)/(c^2*cos(f*x + e)^2 + 2*c*d*c
os(f*x + e) + d^2)) + 2*(2*b^2*c^9*d^2 - 22*a*b*c^8*d^3 + 14*a*b*c^6*d^5 +
8*a*b*c^4*d^7 + 23*a^2*c^3*d^8 - 6*a^2*c*d^10 + (26*a^2 + 11*b^2)*c^7*d^4 -
 (43*a^2 + 13*b^2)*c^5*d^6 + (6*b^2*c^11 - 36*a*b*c^10*d + 46*a*b*c^8*d^3 -
 14*a*b*c^6*d^5 + 4*a*b*c^4*d^7 - 11*a^2*c^3*d^8 + 4*(9*a^2 + b^2)*c^9*d^2
- (68*a^2 + 11*b^2)*c^7*d^4 + (43*a^2 + b^2)*c^5*d^6)*cos(f*x + e)^2 + 3*(2
*b^2*c^10*d - 18*a*b*c^9*d^2 + 16*a*b*c^7*d^4 + 2*a*b*c^5*d^6 - 5*a^2*c^2*d
^9 + (20*a^2 + 7*b^2)*c^8*d^3 - 5*(7*a^2 + 2*b^2)*c^6*d^5 + (20*a^2 + b^2)*
c^4*d^7)*cos(f*x + e))*sin(f*x + e))/((c^15 - 4*c^13*d^2 + 6*c^11*d^4 - 4*c
^9*d^6 + c^7*d^8)*f*cos(f*x + e)^3 + 3*(c^14*d - 4*c^12*d^3 + 6*c^10*d^5 -
4*c^8*d^7 + c^6*d^9)*f*cos(f*x + e)^2 + 3*(c^13*d^2 - 4*c^11*d^4 + 6*c^9*d^
6 - 4*c^7*d^8 + c^5*d^10)*f*cos(f*x + e) + (c^12*d^3 - 4*c^10*d^5 + 6*c^8*d
^7 - 4*c^6*d^9 + c^4*d^11)*f), 1/6*(6*(a^2*c^11 - 4*a^2*c^9*d^2 + 6*a^2*c^7
*d^4 - 4*a^2*c^5*d^6 + a^2*c^3*d^8)*f*x*cos(f*x + e)^3 + 18*(a^2*c^10*d - 4
*a^2*c^8*d^3 + 6*a^2*c^6*d^5 - 4*a^2*c^4*d^7 + a^2*c^2*d^9)*f*x*cos(f*x + e
)^2 + 18*(a^2*c^9*d^2 - 4*a^2*c^7*d^4 + 6*a^2*c^5*d^6 - 4*a^2*c^3*d^8 + a^2
*c*d^10)*f*x*cos(f*x + e) + 6*(a^2*c^8*d^3 - 4*a^2*c^6*d^5 + 6*a^2*c^4*d^7
- 4*a^2*c^2*d^9 + a^2*d^11)*f*x + 3*(4*a*b*c^7*d^3 + 6*a*b*c^5*d^5 - 7*a^2*
c^2*d^8 + 2*a^2*d^10 - 4*(2*a^2 + b^2)*c^6*d^4 + (8*a^2 - b^2)*c^4*d^6 + (4
*a*b*c^10 + 6*a*b*c^8*d^2 - 7*a^2*c^5*d^5 + 2*a^2*c^3*d^7 - 4*(2*a^2 + b^2)
*c^9*d + (8*a^2 - b^2)*c^7*d^3)*cos(f*x + e)^3 + 3*(4*a*b*c^9*d + 6*a*b*c^7
*d^3 - 7*a^2*c^4*d^6 + 2*a^2*c^2*d^8 - 4*(2*a^2 + b^2)*c^8*d^2 + (8*a^2 - b
^2)*c^6*d^4)*cos(f*x + e)^2 + 3*(4*a*b*c^8*d^2 + 6*a*b*c^6*d^4 - 7*a^2*c^3*
d^7 + 2*a^2*c*d^9 - 4*(2*a^2 + b^2)*c^7*d^3 + (8*a^2 - b^2)*c^5*d^5)*cos(f*
x + e))*sqrt(-c^2 + d^2)*arctan(-sqrt(-c^2 + d^2)*(d*cos(f*x + e) + c)/((c^
2 - d^2)*sin(f*x + e))) + (2*b^2*c^9*d^2 - 22*a*b*c^8*d^3 + 14*a*b*c^6*d^5
+ 8*a*b*c^4*d^7 + 23*a^2*c^3*d^8 - 6*a^2*c*d^10 + (26*a^2 + 11*b^2)*c^7*d^4
 - (43*a^2 + 13*b^2)*c^5*d^6 + (6*b^2*c^11 - 36*a*b*c^10*d + 46*a*b*c^8*d^3
 - 14*a*b*c^6*d^5 + 4*a*b*c^4*d^7 - 11*a^2*c^3*d^8 + 4*(9*a^2 + b^2)*c^9*d^
2 - (68*a^2 + 11*b^2)*c^7*d^4 + (43*a^2 + b^2)*c^5*d^6)*cos(f*x + e)^2 + 3*
(2*b^2*c^10*d - 18*a*b*c^9*d^2 + 16*a*b*c^7*d^4 + 2*a*b*c^5*d^6 - 5*a^2*c^2
*d^9 + (20*a^2 + 7*b^2)*c^8*d^3 - 5*(7*a^2 + 2*b^2)*c^6*d^5 + (20*a^2 + b^2
)*c^4*d^7)*cos(f*x + e))*sin(f*x + e))/((c^15 - 4*c^13*d^2 + 6*c^11*d^4 - 4
*c^9*d^6 + c^7*d^8)*f*cos(f*x + e)^3 + 3*(c^14*d - 4*c^12*d^3 + 6*c^10*d^5
- 4*c^8*d^7 + c^6*d^9)*f*cos(f*x + e)^2 + 3*(c^13*d^2 - 4*c^11*d^4 + 6*c^9*
d^6 - 4*c^7*d^8 + c^5*d^10)*f*cos(f*x + e) + (c^12*d^3 - 4*c^10*d^5 + 6*c^8
*d^7 - 4*c^6*d^9 + c^4*d^11)*f)]
```

giac [B] time = 0.46, size = 1253, normalized size = 3.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] 1/3*(3*(4*a*b*c^7 - 8*a^2*c^6*d - 4*b^2*c^6*d + 6*a*b*c^5*d^2 + 8*a^2*c^4*d
^3 - b^2*c^4*d^3 - 7*a^2*c^2*d^5 + 2*a^2*d^7)*(pi*floor(1/2*(f*x + e)/pi +
```

```
1/2)*sgn(-2*c + 2*d) + arctan(-(c*tan(1/2*f*x + 1/2*e) - d*tan(1/2*f*x + 1/
2*e))/sqrt(-c^2 + d^2)))/((c^10 - 3*c^8*d^2 + 3*c^6*d^4 - c^4*d^6)*sqrt(-c^
2 + d^2)) + 3*(f*x + e)*a^2/c^4 - (6*b^2*c^8*tan(1/2*f*x + 1/2*e)^5 - 36*a*
b*c^7*d*tan(1/2*f*x + 1/2*e)^5 - 6*b^2*c^7*d*tan(1/2*f*x + 1/2*e)^5 + 36*a^
2*c^6*d^2*tan(1/2*f*x + 1/2*e)^5 + 54*a*b*c^6*d^2*tan(1/2*f*x + 1/2*e)^5 +
12*b^2*c^6*d^2*tan(1/2*f*x + 1/2*e)^5 - 60*a^2*c^5*d^3*tan(1/2*f*x + 1/2*e)
^5 - 12*a*b*c^5*d^3*tan(1/2*f*x + 1/2*e)^5 - 27*b^2*c^5*d^3*tan(1/2*f*x + 1
/2*e)^5 - 6*a^2*c^4*d^4*tan(1/2*f*x + 1/2*e)^5 + 6*a*b*c^4*d^4*tan(1/2*f*x
+ 1/2*e)^5 + 12*b^2*c^4*d^4*tan(1/2*f*x + 1/2*e)^5 + 45*a^2*c^3*d^5*tan(1/2
*f*x + 1/2*e)^5 - 12*a*b*c^3*d^5*tan(1/2*f*x + 1/2*e)^5 + 3*b^2*c^3*d^5*tan
(1/2*f*x + 1/2*e)^5 - 6*a^2*c^2*d^6*tan(1/2*f*x + 1/2*e)^5 - 15*a^2*c*d^7*t
an(1/2*f*x + 1/2*e)^5 + 6*a^2*d^8*tan(1/2*f*x + 1/2*e)^5 - 12*b^2*c^8*tan(1
/2*f*x + 1/2*e)^3 + 72*a*b*c^7*d*tan(1/2*f*x + 1/2*e)^3 - 72*a^2*c^6*d^2*ta
n(1/2*f*x + 1/2*e)^3 - 16*b^2*c^6*d^2*tan(1/2*f*x + 1/2*e)^3 - 64*a*b*c^5*d
^3*tan(1/2*f*x + 1/2*e)^3 + 116*a^2*c^4*d^4*tan(1/2*f*x + 1/2*e)^3 + 28*b^2
*c^4*d^4*tan(1/2*f*x + 1/2*e)^3 - 8*a*b*c^3*d^5*tan(1/2*f*x + 1/2*e)^3 - 56
*a^2*c^2*d^6*tan(1/2*f*x + 1/2*e)^3 + 12*a^2*d^8*tan(1/2*f*x + 1/2*e)^3 + 6
*b^2*c^8*tan(1/2*f*x + 1/2*e) - 36*a*b*c^7*d*tan(1/2*f*x + 1/2*e) + 6*b^2*c
^7*d*tan(1/2*f*x + 1/2*e) + 36*a^2*c^6*d^2*tan(1/2*f*x + 1/2*e) - 54*a*b*c^
6*d^2*tan(1/2*f*x + 1/2*e) + 12*b^2*c^6*d^2*tan(1/2*f*x + 1/2*e) + 60*a^2*c
^5*d^3*tan(1/2*f*x + 1/2*e) - 12*a*b*c^5*d^3*tan(1/2*f*x + 1/2*e) + 27*b^2*
c^5*d^3*tan(1/2*f*x + 1/2*e) - 6*a^2*c^4*d^4*tan(1/2*f*x + 1/2*e) - 6*a*b*c
^4*d^4*tan(1/2*f*x + 1/2*e) + 12*b^2*c^4*d^4*tan(1/2*f*x + 1/2*e) - 45*a^2*
c^3*d^5*tan(1/2*f*x + 1/2*e) - 12*a*b*c^3*d^5*tan(1/2*f*x + 1/2*e) - 3*b^2*
c^3*d^5*tan(1/2*f*x + 1/2*e) - 6*a^2*c^2*d^6*tan(1/2*f*x + 1/2*e) + 15*a^2*
c*d^7*tan(1/2*f*x + 1/2*e) + 6*a^2*d^8*tan(1/2*f*x + 1/2*e))/((c^9 - 3*c^7*
d^2 + 3*c^5*d^4 - c^3*d^6)*(c*tan(1/2*f*x + 1/2*e)^2 - d*tan(1/2*f*x + 1/2*
e)^2 - c - d)^3))/f
```

maple [B] time = 0.80, size = 3293, normalized size = 8.73

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^4,x)
```

```
[Out] 2/f*a^2/c^4*arctan(tan(1/2*e+1/2*f*x))+6/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/
2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*
a^2*d^4-1/f/c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)
/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^2*d^5-8/3/f/(tan(1/2*e+1/2*
f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(
1/2*e+1/2*f*x)^3*a*b*d^3+4/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d
-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a*b*d^3-2/f/c^3/
(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*
c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^2*d^6+2/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1
/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)
*b^2*d-6/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c
^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*b^2*d^2+6/f*c/(c^6-3*c^4*d^2+3*c
^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-
d))^(1/2))*a*b*d^2-12/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-
d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^2*d^2+6/f/c/(ta
n(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d
^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^2*d^4+1/f/c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/
2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^
5*a^2*d^5-2/f/c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-
d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^2*d^6-2/f*c^2/(tan(1/2*
e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3
)*tan(1/2*e+1/2*f*x)^5*b^2*d-6/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*
x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*b^2*d^2+
24/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2
```

```
)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*d^2-44/3/f/c/(tan(1/2*e+1/2*f*x)
^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*
e+1/2*f*x)^3*a^2*d^4+4/f/c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d
-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*d^6+28/3/f
*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c
^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^2*d^2-12/f*c/(tan(1/2*e+1/2*f*x)^2*c-t
an(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*
f*x)*a^2*d^2+4/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d
)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a*b*d^3+6/f*c/(tan(1/2*e+1
/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*t
an(1/2*e+1/2*f*x)^5*a*b*d^2+12/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*
f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a*b*d+
12/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3
*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a*b*d+1/f/(tan(1/2*e+1/2*f*x)^2*c-ta
n(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f
*x)*b^2*d^3-4/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)
/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^2*d^3-1/f/(tan(1/2*e+1/2*
f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(
1/2*e+1/2*f*x)^5*b^2*d^3+4/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d
-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^2*d^3-8/f*c^2/
(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x
)*(c-d)/((c+d)*(c-d))^(1/2))*a^2*d-4/f*c^2/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((
c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*b^2
*d+2/f/c^4/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/
2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^2*d^7+4/f*c^3/(tan(1/2*e+1/2*f*x)
^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*
e+1/2*f*x)^3*b^2-2/f*c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d
)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*b^2-7/f/c^2/(c^6-3*c
^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/
((c+d)*(c-d))^(1/2))*a^2*d^5+4/f*c^3/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(
c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*b-2/f*c
^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d
+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*b^2-24/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan
(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*
x)^3*a*b*d-6/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d
)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a*b*d^2+8/f/(c^6-3*c^4*d^2+3
*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(
c-d))^(1/2))*a^2*d^3-1/f/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*
arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*b^2*d^3
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^2/(c+d*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [B] time = 15.07, size = 12818, normalized size = 34.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^2/(c + d/cos(e + f*x))^4,x)
```

[Out] (2*a^2*atan(((a^2*((8*tan(e/2 + (f*x)/2)*(4*a^4*c^14 + 8*a^4*d^14 - 8*a^4*c
*d^13 - 8*a^4*c^13*d + 16*a^2*b^2*c^14 - 48*a^4*c^2*d^12 + 48*a^4*c^3*d^11
+ 117*a^4*c^4*d^10 - 120*a^4*c^5*d^9 - 164*a^4*c^6*d^8 + 160*a^4*c^7*d^7 +
156*a^4*c^8*d^6 - 120*a^4*c^9*d^5 - 92*a^4*c^10*d^4 + 48*a^4*c^11*d^3 + 44*
a^4*c^12*d^2 + b^4*c^8*d^6 + 8*b^4*c^10*d^4 + 16*b^4*c^12*d^2 - 12*a*b^3*c^
9*d^5 - 56*a*b^3*c^11*d^3 + 24*a^3*b*c^5*d^9 - 68*a^3*b*c^7*d^7 + 40*a^3*b*
c^9*d^5 - 32*a^3*b*c^11*d^3 - 4*a^2*b^2*c^4*d^10 - 2*a^2*b^2*c^6*d^8 + 40*a
^2*b^2*c^8*d^6 - 12*a^2*b^2*c^10*d^4 + 112*a^2*b^2*c^12*d^2 - 32*a*b^3*c^13
*d - 64*a^3*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5
*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d
^3 - 5*c^15*d^2) + (a^2*((8*(4*a^2*c^21 - 16*a^2*c^20*d - 8*b^2*c^20*d - 4*
a^2*c^8*d^13 + 2*a^2*c^9*d^12 + 26*a^2*c^10*d^11 - 14*a^2*c^11*d^10 - 70*a^
2*c^12*d^9 + 30*a^2*c^13*d^8 + 110*a^2*c^14*d^7 - 30*a^2*c^15*d^6 - 110*a^2
*c^16*d^5 + 20*a^2*c^17*d^4 + 64*a^2*c^18*d^3 - 12*a^2*c^19*d^2 - 2*b^2*c^1
1*d^10 + 2*b^2*c^12*d^9 - 2*b^2*c^13*d^8 + 2*b^2*c^14*d^7 + 18*b^2*c^15*d^6
 - 18*b^2*c^16*d^5 - 22*b^2*c^17*d^4 + 22*b^2*c^18*d^3 + 8*b^2*c^19*d^2 + 8
*a*b*c^21 - 8*a*b*c^20*d + 12*a*b*c^12*d^9 - 12*a*b*c^13*d^8 - 28*a*b*c^14*
d^7 + 28*a*b*c^15*d^6 + 12*a*b*c^16*d^5 - 12*a*b*c^17*d^4 + 12*a*b*c^18*d^3
 - 12*a*b*c^19*d^2))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5
*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*
d^3 - 5*c^18*d^2) - (a^2*tan(e/2 + (f*x)/2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*
d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^1
4*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*
d^3 - 8*c^20*d^2)*8i)/(c^4*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9
 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^
14*d^3 - 5*c^15*d^2)))*1i)/c^4))/c^4 + (a^2*((8*tan(e/2 + (f*x)/2)*(4*a^4*c
^14 + 8*a^4*d^14 - 8*a^4*c*d^13 - 8*a^4*c^13*d + 16*a^2*b^2*c^14 - 48*a^4*c
^2*d^12 + 48*a^4*c^3*d^11 + 117*a^4*c^4*d^10 - 120*a^4*c^5*d^9 - 164*a^4*c^
6*d^8 + 160*a^4*c^7*d^7 + 156*a^4*c^8*d^6 - 120*a^4*c^9*d^5 - 92*a^4*c^10*d
^4 + 48*a^4*c^11*d^3 + 44*a^4*c^12*d^2 + b^4*c^8*d^6 + 8*b^4*c^10*d^4 + 16*
b^4*c^12*d^2 - 12*a*b^3*c^9*d^5 - 56*a*b^3*c^11*d^3 + 24*a^3*b*c^5*d^9 - 68
*a^3*b*c^7*d^7 + 40*a^3*b*c^9*d^5 - 32*a^3*b*c^11*d^3 - 4*a^2*b^2*c^4*d^10
- 2*a^2*b^2*c^6*d^8 + 40*a^2*b^2*c^8*d^6 - 12*a^2*b^2*c^10*d^4 + 112*a^2*b^
2*c^12*d^2 - 32*a*b^3*c^13*d - 64*a^3*b*c^13*d))/(c^16*d + c^17 - c^6*d^11
- c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^
5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2) - (a^2*((8*(4*a^2*c^21 - 16*a^2*
c^20*d - 8*b^2*c^20*d - 4*a^2*c^8*d^13 + 2*a^2*c^9*d^12 + 26*a^2*c^10*d^11
- 14*a^2*c^11*d^10 - 70*a^2*c^12*d^9 + 30*a^2*c^13*d^8 + 110*a^2*c^14*d^7 -
 30*a^2*c^15*d^6 - 110*a^2*c^16*d^5 + 20*a^2*c^17*d^4 + 64*a^2*c^18*d^3 - 1
2*a^2*c^19*d^2 - 2*b^2*c^11*d^10 + 2*b^2*c^12*d^9 - 2*b^2*c^13*d^8 + 2*b^2*
c^14*d^7 + 18*b^2*c^15*d^6 - 18*b^2*c^16*d^5 - 22*b^2*c^17*d^4 + 22*b^2*c^1
8*d^3 + 8*b^2*c^19*d^2 + 8*a*b*c^21 - 8*a*b*c^20*d + 12*a*b*c^12*d^9 - 12*a
*b*c^13*d^8 - 28*a*b*c^14*d^7 + 28*a*b*c^15*d^6 + 12*a*b*c^16*d^5 - 12*a*b*
c^17*d^4 + 12*a*b*c^18*d^3 - 12*a*b*c^19*d^2))/(c^19*d + c^20 - c^9*d^11 -
c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d
^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) + (a^2*tan(e/2 + (f*x)/2)*(8*c^
21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^1
0 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^
5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2)*8i)/(c^4*(c^16*d + c^17 - c^6*d
^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^1
2*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*1i)/c^4))/c^4)/((16*(4*a^6
*d^13 - 8*a^5*b*c^13 - 2*a^6*c*d^12 + 16*a^6*c^12*d + 16*a^4*b^2*c^13 - 26*
a^6*c^2*d^11 + 11*a^6*c^3*d^10 + 70*a^6*c^4*d^9 - 34*a^6*c^5*d^8 - 110*a^6*
c^6*d^7 + 66*a^6*c^7*d^6 + 110*a^6*c^8*d^5 - 64*a^6*c^9*d^4 - 64*a^6*c^10*d
^3 + 48*a^6*c^11*d^2 - 32*a^3*b^3*c^12*d + 8*a^4*b^2*c^12*d + 12*a^5*b*c^4*
d^9 + 12*a^5*b*c^5*d^8 - 40*a^5*b*c^6*d^7 - 28*a^5*b*c^7*d^6 + 28*a^5*b*c^8
*d^5 + 12*a^5*b*c^9*d^4 - 44*a^5*b*c^10*d^3 + 12*a^5*b*c^11*d^2 + a^2*b^4*c
^7*d^6 + 8*a^2*b^4*c^9*d^4 + 16*a^2*b^4*c^11*d^2 - 12*a^3*b^3*c^8*d^5 - 56*
a^3*b^3*c^10*d^3 - 2*a^4*b^2*c^3*d^10 - 2*a^4*b^2*c^4*d^9 - 2*a^4*b^2*c^6*d

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^7 + 22*a^4*b^2*c^7*d^6 + 18*a^4*b^2*c^8*d^5 + 10*a^4*b^2*c^9*d^4 - 22*a^4*
b^2*c^10*d^3 + 104*a^4*b^2*c^11*d^2 - 56*a^5*b*c^12*d))/(c^19*d + c^20 - c^
9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 +
10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (a^2*((8*tan(e/2 + (
f*x)/2)*(4*a^4*c^14 + 8*a^4*d^14 - 8*a^4*c*d^13 - 8*a^4*c^13*d + 16*a^2*b^2
*c^14 - 48*a^4*c^2*d^12 + 48*a^4*c^3*d^11 + 117*a^4*c^4*d^10 - 120*a^4*c^5*
d^9 - 164*a^4*c^6*d^8 + 160*a^4*c^7*d^7 + 156*a^4*c^8*d^6 - 120*a^4*c^9*d^5
 - 92*a^4*c^10*d^4 + 48*a^4*c^11*d^3 + 44*a^4*c^12*d^2 + b^4*c^8*d^6 + 8*b^
4*c^10*d^4 + 16*b^4*c^12*d^2 - 12*a*b^3*c^9*d^5 - 56*a*b^3*c^11*d^3 + 24*a^
3*b*c^5*d^9 - 68*a^3*b*c^7*d^7 + 40*a^3*b*c^9*d^5 - 32*a^3*b*c^11*d^3 - 4*a
^2*b^2*c^4*d^10 - 2*a^2*b^2*c^6*d^8 + 40*a^2*b^2*c^8*d^6 - 12*a^2*b^2*c^10*
d^4 + 112*a^2*b^2*c^12*d^2 - 32*a*b^3*c^13*d - 64*a^3*b*c^13*d))/(c^16*d +
c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*
d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2) + (a^2*((8*(4*a^
2*c^21 - 16*a^2*c^20*d - 8*b^2*c^20*d - 4*a^2*c^8*d^13 + 2*a^2*c^9*d^12 + 2
6*a^2*c^10*d^11 - 14*a^2*c^11*d^10 - 70*a^2*c^12*d^9 + 30*a^2*c^13*d^8 + 11
0*a^2*c^14*d^7 - 30*a^2*c^15*d^6 - 110*a^2*c^16*d^5 + 20*a^2*c^17*d^4 + 64*
a^2*c^18*d^3 - 12*a^2*c^19*d^2 - 2*b^2*c^11*d^10 + 2*b^2*c^12*d^9 - 2*b^2*c
^13*d^8 + 2*b^2*c^14*d^7 + 18*b^2*c^15*d^6 - 18*b^2*c^16*d^5 - 22*b^2*c^17*
d^4 + 22*b^2*c^18*d^3 + 8*b^2*c^19*d^2 + 8*a*b*c^21 - 8*a*b*c^20*d + 12*a*b
*c^12*d^9 - 12*a*b*c^13*d^8 - 28*a*b*c^14*d^7 + 28*a*b*c^15*d^6 + 12*a*b*c^
16*d^5 - 12*a*b*c^17*d^4 + 12*a*b*c^18*d^3 - 12*a*b*c^19*d^2))/(c^19*d + c^
20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14
*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (a^2*tan(e/2
+ (f*x)/2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^1
1 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d
^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2)*8i)/(c^4*(c^16*
d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c
^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*1i)/c^4)*1
i)/c^4 + (a^2*((8*tan(e/2 + (f*x)/2)*(4*a^4*c^14 + 8*a^4*d^14 - 8*a^4*c*d^1
3 - 8*a^4*c^13*d + 16*a^2*b^2*c^14 - 48*a^4*c^2*d^12 + 48*a^4*c^3*d^11 + 11
7*a^4*c^4*d^10 - 120*a^4*c^5*d^9 - 164*a^4*c^6*d^8 + 160*a^4*c^7*d^7 + 156*
a^4*c^8*d^6 - 120*a^4*c^9*d^5 - 92*a^4*c^10*d^4 + 48*a^4*c^11*d^3 + 44*a^4*
c^12*d^2 + b^4*c^8*d^6 + 8*b^4*c^10*d^4 + 16*b^4*c^12*d^2 - 12*a*b^3*c^9*d^
5 - 56*a*b^3*c^11*d^3 + 24*a^3*b*c^5*d^9 - 68*a^3*b*c^7*d^7 + 40*a^3*b*c^9*
d^5 - 32*a^3*b*c^11*d^3 - 4*a^2*b^2*c^4*d^10 - 2*a^2*b^2*c^6*d^8 + 40*a^2*b
^2*c^8*d^6 - 12*a^2*b^2*c^10*d^4 + 112*a^2*b^2*c^12*d^2 - 32*a*b^3*c^13*d -
 64*a^3*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9
*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 -
 5*c^15*d^2) - (a^2*((8*(4*a^2*c^21 - 16*a^2*c^20*d - 8*b^2*c^20*d - 4*a^2*
c^8*d^13 + 2*a^2*c^9*d^12 + 26*a^2*c^10*d^11 - 14*a^2*c^11*d^10 - 70*a^2*c^
12*d^9 + 30*a^2*c^13*d^8 + 110*a^2*c^14*d^7 - 30*a^2*c^15*d^6 - 110*a^2*c^1
6*d^5 + 20*a^2*c^17*d^4 + 64*a^2*c^18*d^3 - 12*a^2*c^19*d^2 - 2*b^2*c^11*d^
10 + 2*b^2*c^12*d^9 - 2*b^2*c^13*d^8 + 2*b^2*c^14*d^7 + 18*b^2*c^15*d^6 - 1
8*b^2*c^16*d^5 - 22*b^2*c^17*d^4 + 22*b^2*c^18*d^3 + 8*b^2*c^19*d^2 + 8*a*b
*c^21 - 8*a*b*c^20*d + 12*a*b*c^12*d^9 - 12*a*b*c^13*d^8 - 28*a*b*c^14*d^7
+ 28*a*b*c^15*d^6 + 12*a*b*c^16*d^5 - 12*a*b*c^17*d^4 + 12*a*b*c^18*d^3 - 1
2*a*b*c^19*d^2))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^1
2*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3
- 5*c^18*d^2) + (a^2*tan(e/2 + (f*x)/2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13
 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^
8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3
- 8*c^20*d^2)*8i)/(c^4*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5
*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d
^3 - 5*c^15*d^2)))*1i)/c^4)*1i)/c^4)))/(c^4*f) - ((tan(e/2 + (f*x)/2)^5*(2*
a^2*d^6 + 2*b^2*c^6 - a^2*c*d^5 + 2*b^2*c^5*d - 6*a^2*c^2*d^4 + 4*a^2*c^3*d
^3 + 12*a^2*c^4*d^2 + b^2*c^3*d^3 + 6*b^2*c^4*d^2 - 12*a*b*c^5*d - 4*a*b*c^
3*d^3 - 6*a*b*c^4*d^2))/((c^3*d - c^4)*(c + d)^3) + (4*tan(e/2 + (f*x)/2)^3
*(3*a^2*d^6 + 3*b^2*c^6 - 11*a^2*c^2*d^4 + 18*a^2*c^4*d^2 + 7*b^2*c^4*d^2 -
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18*a*b*c^5*d - 2*a*b*c^3*d^3))/(3*(c + d)^2*(c^5 - 2*c^4*d + c^3*d^2)) + (tan(e/2 + (f*x)/2)*(2*a^2*d^6 + 2*b^2*c^6 + a^2*c*d^5 - 2*b^2*c^5*d - 6*a^2*c^2*d^4 - 4*a^2*c^3*d^3 + 12*a^2*c^4*d^2 - b^2*c^3*d^3 + 6*b^2*c^4*d^2 - 12*a*b*c^5*d - 4*a*b*c^3*d^3 + 6*a*b*c^4*d^2))/((c + d)*(3*c^5*d - c^6 + c^3*d^3 - 3*c^4*d^2)))/(f*(tan(e/2 + (f*x)/2)^2*(3*c*d^2 - 3*c^2*d - 3*c^3 + 3*d^3) - tan(e/2 + (f*x)/2)^4*(3*c*d^2 + 3*c^2*d - 3*c^3 - 3*d^3) + 3*c*d^2 + 3*c^2*d + c^3 + d^3 - tan(e/2 + (f*x)/2)^6*(3*c*d^2 - 3*c^2*d + c^3 - d^3))) + (atan(((((8*tan(e/2 + (f*x)/2)*(4*a^4*c^14 + 8*a^4*d^14 - 8*a^4*c*d^13 - 8*a^4*c^13*d + 16*a^2*b^2*c^14 - 48*a^4*c^2*d^12 + 48*a^4*c^3*d^11 + 117*a^4*c^4*d^10 - 120*a^4*c^5*d^9 - 164*a^4*c^6*d^8 + 160*a^4*c^7*d^7 + 156*a^4*c^8*d^6 - 120*a^4*c^9*d^5 - 92*a^4*c^10*d^4 + 48*a^4*c^11*d^3 + 44*a^4*c^12*d^2 + b^4*c^8*d^6 + 8*b^4*c^10*d^4 + 16*b^4*c^12*d^2 - 12*a*b^3*c^9*d^5 - 56*a*b^3*c^11*d^3 + 24*a^3*b*c^5*d^9 - 68*a^3*b*c^7*d^7 + 40*a^3*b*c^9*d^5 - 32*a^3*b*c^11*d^3 - 4*a^2*b^2*c^4*d^10 - 2*a^2*b^2*c^6*d^8 + 40*a^2*b^2*c^8*d^6 - 12*a^2*b^2*c^10*d^4 + 112*a^2*b^2*c^12*d^2 - 32*a*b^3*c^13*d - 64*a^3*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2) + (((8*(4*a^2*c^21 - 16*a^2*c^20*d - 8*b^2*c^20*d - 4*a^2*c^8*d^13 + 2*a^2*c^9*d^12 + 26*a^2*c^10*d^11 - 14*a^2*c^11*d^10 - 70*a^2*c^12*d^9 + 30*a^2*c^13*d^8 + 110*a^2*c^14*d^7 - 30*a^2*c^15*d^6 - 110*a^2*c^16*d^5 + 20*a^2*c^17*d^4 + 64*a^2*c^18*d^3 - 12*a^2*c^19*d^2 - 2*b^2*c^11*d^10 + 2*b^2*c^12*d^9 - 2*b^2*c^13*d^8 + 2*b^2*c^14*d^7 + 18*b^2*c^15*d^6 - 18*b^2*c^16*d^5 - 22*b^2*c^17*d^4 + 22*b^2*c^18*d^3 + 8*b^2*c^19*d^2 + 8*a*b*c^21 - 8*a*b*c^20*d + 12*a*b*c^12*d^9 - 12*a*b*c^13*d^8 - 28*a*b*c^14*d^7 + 28*a*b*c^15*d^6 + 12*a*b*c^16*d^5 - 12*a*b*c^17*d^4 + 12*a*b*c^18*d^3 - 12*a*b*c^19*d^2))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (4*tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2))/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2)*1i)/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)) + (((8*tan(e/2 + (f*x)/2)*(4*a^4*c^14 + 8*a^4*d^14 - 8*a^4*c*d^13 - 8*a^4*c^13*d + 16*a^2*b^2*c^14 - 48*a^4*c^2*d^12 + 48*a^4*c^3*d^11 + 117*a^4*c^4*d^10 - 120*a^4*c^5*d^9 - 164*a^4*c^6*d^8 + 160*a^4*c^7*d^7 + 156*a^4*c^8*d^6 - 120*a^4*c^9*d^5 - 92*a^4*c^10*d^4 + 48*a^4*c^11*d^3 + 44*a^4*c^12*d^2 + b^4*c^8*d^6 + 8*b^4*c^10*d^4 + 16*b^4*c^12*d^2 - 12*a*b^3*c^9*d^5 - 56*a*b^3*c^11*d^3 + 24*a^3*b*c^5*d^9 - 68*a^3*b*c^7*d^7 + 40*a^3*b*c^9*d^5 - 32*a^3*b*c^11*d^3 - 4*a^2*b^2*c^4*d^10 - 2*a^2*b^2*c^6*d^8 + 40*a^2*b^2*c^8*d^6 - 12*a^2*b^2*c^10*d^4 + 112*a^2*b^2*c^12*d^2 - 32*a*b^3*c^13*d - 64*a^3*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2) - (((8*(4*a^2*c^21 - 16*a^2*c^20*d - 8*b^2*c^20*d - 4*a^2*c^8*d^13 + 2*a^2*c^9*d^12 + 26*a^2*c^10*d^11 - 14*a^2*c^11*d^10 - 70*a^2*c^12*d^9 + 30*a^2*c^13*d^8 + 110*a^2*c^14*d^7 - 30*a^2*c^15*d^6 - 110*a^2*c^16*d^5 + 20*a^2*c^17*d^4 + 64*a^2*c^18*d^3 - 12*a^2*c^19*d^2 - 2*b^2*c^11*d^10 + 2*b^2*c^12*d^9 - 2*b^2*c^13*d^8 + 2*b^2*c^14*d^7 + 18*b^2*c^15*d^6 - 18*b^2*c^16*d^5 - 22*b^2*c^17*d^4 + 22*b^2*c^18*d^3 + 8*b^2*c^19*d^2 + 8*a*b*c^21 - 8*a*b*c^20*d + 12*a*b*c^12*d^9 - 12*a*b*c^13*d^8 - 28*a*b*c^14*d^7 + 28*a*b*c^15*d^6 +

12*a*b*c^16*d^5 - 12*a*b*c^17*d^4 + 12*a*b*c^18*d^3 - 12*a*b*c^19*d^2))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) + (4*tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2))/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2)*1i)/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)))/((16*(4*a^6*d^13 - 8*a^5*b*c^13 - 2*a^6*c*d^12 + 16*a^6*c^12*d + 16*a^4*b^2*c^13 - 26*a^6*c^2*d^11 + 11*a^6*c^3*d^10 + 70*a^6*c^4*d^9 - 34*a^6*c^5*d^8 - 110*a^6*c^6*d^7 + 66*a^6*c^7*d^6 + 110*a^6*c^8*d^5 - 64*a^6*c^9*d^4 - 64*a^6*c^10*d^3 + 48*a^6*c^11*d^2 - 32*a^3*b^3*c^12*d + 8*a^4*b^2*c^12*d + 12*a^5*b*c^4*d^9 + 12*a^5*b*c^5*d^8 - 40*a^5*b*c^6*d^7 - 28*a^5*b*c^7*d^6 + 28*a^5*b*c^8*d^5 + 12*a^5*b*c^9*d^4 - 44*a^5*b*c^10*d^3 + 12*a^5*b*c^11*d^2 + a^2*b^4*c^7*d^6 + 8*a^2*b^4*c^9*d^4 + 16*a^2*b^4*c^11*d^2 - 12*a^3*b^3*c^8*d^5 - 56*a^3*b^3*c^10*d^3 - 2*a^4*b^2*c^3*d^10 - 2*a^4*b^2*c^4*d^9 - 2*a^4*b^2*c^6*d^7 + 22*a^4*b^2*c^7*d^6 + 18*a^4*b^2*c^8*d^5 + 10*a^4*b^2*c^9*d^4 - 22*a^4*b^2*c^10*d^3 + 104*a^4*b^2*c^11*d^2 - 56*a^5*b*c^12*d))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (((8*tan(e/2 + (f*x)/2)*(4*a^4*c^14 + 8*a^4*d^14 - 8*a^4*c*d^13 - 8*a^4*c^13*d + 16*a^2*b^2*c^14 - 48*a^4*c^2*d^12 + 48*a^4*c^3*d^11 + 117*a^4*c^4*d^10 - 120*a^4*c^5*d^9 - 164*a^4*c^6*d^8 + 160*a^4*c^7*d^7 + 156*a^4*c^8*d^6 - 120*a^4*c^9*d^5 - 92*a^4*c^10*d^4 + 48*a^4*c^11*d^3 + 44*a^4*c^12*d^2 + b^4*c^8*d^6 + 8*b^4*c^10*d^4 + 16*b^4*c^12*d^2 - 12*a*b^3*c^9*d^5 - 56*a*b^3*c^11*d^3 + 24*a^3*b*c^5*d^9 - 68*a^3*b*c^7*d^7 + 40*a^3*b*c^9*d^5 - 32*a^3*b*c^11*d^3 - 4*a^2*b^2*c^4*d^10 - 2*a^2*b^2*c^6*d^8 + 40*a^2*b^2*c^8*d^6 - 12*a^2*b^2*c^10*d^4 + 112*a^2*b^2*c^12*d^2 - 32*a*b^3*c^13*d - 64*a^3*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2) + (((8*(4*a^2*c^21 - 16*a^2*c^20*d - 8*b^2*c^20*d - 4*a^2*c^8*d^13 + 2*a^2*c^9*d^12 + 26*a^2*c^10*d^11 - 14*a^2*c^11*d^10 - 70*a^2*c^12*d^9 + 30*a^2*c^13*d^8 + 110*a^2*c^14*d^7 - 30*a^2*c^15*d^6 - 110*a^2*c^16*d^5 + 20*a^2*c^17*d^4 + 64*a^2*c^18*d^3 - 12*a^2*c^19*d^2 - 2*b^2*c^11*d^10 + 2*b^2*c^12*d^9 - 2*b^2*c^13*d^8 + 2*b^2*c^14*d^7 + 18*b^2*c^15*d^6 - 18*b^2*c^16*d^5 - 22*b^2*c^17*d^4 + 22*b^2*c^18*d^3 + 8*b^2*c^19*d^2 + 8*a*b*c^21 - 8*a*b*c^20*d + 12*a*b*c^12*d^9 - 12*a*b*c^13*d^8 - 28*a*b*c^14*d^7 + 28*a*b*c^15*d^6 + 12*a*b*c^16*d^5 - 12*a*b*c^17*d^4 + 12*a*b*c^18*d^3 - 12*a*b*c^19*d^2))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (4*tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c

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^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2))/(2*(c^18 - c^4*d^14 + 7*
c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d
^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d -
7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2))/(
2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 +
 21*c^14*d^4 - 7*c^16*d^2)) + (((8*tan(e/2 + (f*x)/2)*(4*a^4*c^14 + 8*a^4*d
^14 - 8*a^4*c*d^13 - 8*a^4*c^13*d + 16*a^2*b^2*c^14 - 48*a^4*c^2*d^12 + 48*
a^4*c^3*d^11 + 117*a^4*c^4*d^10 - 120*a^4*c^5*d^9 - 164*a^4*c^6*d^8 + 160*a
^4*c^7*d^7 + 156*a^4*c^8*d^6 - 120*a^4*c^9*d^5 - 92*a^4*c^10*d^4 + 48*a^4*c
^11*d^3 + 44*a^4*c^12*d^2 + b^4*c^8*d^6 + 8*b^4*c^10*d^4 + 16*b^4*c^12*d^2
- 12*a*b^3*c^9*d^5 - 56*a*b^3*c^11*d^3 + 24*a^3*b*c^5*d^9 - 68*a^3*b*c^7*d^
7 + 40*a^3*b*c^9*d^5 - 32*a^3*b*c^11*d^3 - 4*a^2*b^2*c^4*d^10 - 2*a^2*b^2*c
^6*d^8 + 40*a^2*b^2*c^8*d^6 - 12*a^2*b^2*c^10*d^4 + 112*a^2*b^2*c^12*d^2 -
32*a*b^3*c^13*d - 64*a^3*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 +
5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d
^4 - 5*c^14*d^3 - 5*c^15*d^2) - (((8*(4*a^2*c^21 - 16*a^2*c^20*d - 8*b^2*c^
20*d - 4*a^2*c^8*d^13 + 2*a^2*c^9*d^12 + 26*a^2*c^10*d^11 - 14*a^2*c^11*d^1
0 - 70*a^2*c^12*d^9 + 30*a^2*c^13*d^8 + 110*a^2*c^14*d^7 - 30*a^2*c^15*d^6
- 110*a^2*c^16*d^5 + 20*a^2*c^17*d^4 + 64*a^2*c^18*d^3 - 12*a^2*c^19*d^2 -
2*b^2*c^11*d^10 + 2*b^2*c^12*d^9 - 2*b^2*c^13*d^8 + 2*b^2*c^14*d^7 + 18*b^2
*c^15*d^6 - 18*b^2*c^16*d^5 - 22*b^2*c^17*d^4 + 22*b^2*c^18*d^3 + 8*b^2*c^1
9*d^2 + 8*a*b*c^21 - 8*a*b*c^20*d + 12*a*b*c^12*d^9 - 12*a*b*c^13*d^8 - 28*
a*b*c^14*d^7 + 28*a*b*c^15*d^6 + 12*a*b*c^16*d^5 - 12*a*b*c^17*d^4 + 12*a*b
*c^18*d^3 - 12*a*b*c^19*d^2))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^1
1*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4
- 5*c^17*d^3 - 5*c^18*d^2) + (4*tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1
/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3
- b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d
^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14
*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d
^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^
8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)*(c^16*d + c^17 - c^6*d^11 - c^7
*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 1
0*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*
d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d
^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2))/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*
d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)))*((c + d)^7*(
c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^6*d - 7*a^2*c^2*d^5 + 8*
a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d^2))/(2*(c^18 - c^4*d^14
 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c
^16*d^2))))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^2*d^7 - 8*a^2*c^6*d - 4*b^2*c^
6*d - 7*a^2*c^2*d^5 + 8*a^2*c^4*d^3 - b^2*c^4*d^3 + 4*a*b*c^7 + 6*a*b*c^5*d
^2)*1i)/(f*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c
^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2))
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^2}{\left(c+d\sec\left(e+fx\right)\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**2/(c+d*sec(f*x+e))**4,x)
```

```
[Out] Integral((a + b*sec(e + f*x))**2/(c + d*sec(e + f*x))**4, x)
```

3.195 $\int \frac{(a+b\sec(e+fx))^3}{(c+d\sec(e+fx))^3}\,dx$

Optimal. Leaf size=254

$$\frac{a^3x}{c^3}-\frac{(bc-ad)\left(-\left(a^2\left(6c^4-5c^2d^2+2d^4\right)\right)+2abcd\left(4c^2-d^2\right)-b^2c^2\left(c^2+2d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^3f(c-d)^{5/2}(c+d)^{5/2}}+\frac{(b$$

```
[Out] a^3*x/c^3-(-a*d+b*c)*(2*a*b*c*d*(4*c^2-d^2)-b^2*c^2*(c^2+2*d^2)-a^2*(6*c^4-
5*c^2*d^2+2*d^4))*arctanh((c-d)^(1/2)*tan(1/2*e+1/2*f*x)/(c+d)^(1/2))/c^3/(
c-d)^(5/2)/(c+d)^(5/2)/f+1/2*(-a*d+b*c)^2*(b+a*cos(f*x+e))*sin(f*x+e)/c/(c^
2-d^2)/f/(d+c*cos(f*x+e))^2+1/2*(-a*d+b*c)^2*(5*a*c^2-2*a*d^2-3*b*c*d)*sin(
f*x+e)/c^2/(c^2-d^2)^2/f/(d+c*cos(f*x+e))
```

Rubi [A] time = 1.13, antiderivative size = 254, 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 = {3941, 2792, 3021, 2735, 2659, 208}

$$-\frac{(bc-ad)\left(a^2\left(-\left(-5c^2d^2+6c^4+2d^4\right)\right)+2abcd\left(4c^2-d^2\right)-b^2c^2\left(c^2+2d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt{c-d}\,\tan\left(\frac{1}{2}(e+fx)\right)}{\sqrt{c+d}}\right)}{c^3f(c-d)^{5/2}(c+d)^{5/2}}+\frac{a^3x}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^3/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] (a^3*x)/c^3 - ((b*c - a*d)*(2*a*b*c*d*(4*c^2 - d^2) - b^2*c^2*(c^2 + 2*d^2)
 - a^2*(6*c^4 - 5*c^2*d^2 + 2*d^4))*ArcTanh[(Sqrt[c - d]*Tan[(e + f*x)/2])/
Sqrt[c + d]])/(c^3*(c - d)^(5/2)*(c + d)^(5/2)*f) + ((b*c - a*d)^2*(b + a*C
os[e + f*x])*Sin[e + f*x])/(2*c*(c^2 - d^2)*f*(d + c*Cos[e + f*x])^2) + ((b
*c - a*d)^2*(5*a*c^2 - 3*b*c*d - 2*a*d^2)*Sin[e + f*x])/(2*c^2*(c^2 - d^2)^
2*f*(d + c*Cos[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2792

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> -Simp[((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*Cos
[e + f*x]*(a + b*Sin[e + f*x])^(m - 2)*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(
n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)), Int[(a + b*Sin[e
```

```
+ f*x])^(m - 3)*(c + d*Sin[e + f*x])^(n + 1)*Simp[b*(m - 2)*(b*c - a*d)^2 +
 a*d*(n + 1)*(c*(a^2 + b^2) - 2*a*b*d) + (b*(n + 1)*(a*b*c^2 + c*d*(a^2 + b
^2) - 3*a*b*d^2) - a*(n + 2)*(b*c - a*d)^2)*Sin[e + f*x] + b*(b^2*(c^2 - d^
2) - m*(b*c - a*d)^2 + d*n*(2*a*b*c - d*(a^2 + b^2)))*Sin[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2
, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 2] && LtQ[n, -1] && (IntegerQ[m] || Int
egersQ[2*m, 2*n])
```

Rule 3021

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((A*b^2
 - a*b*B + a^2*C)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 1)*(
a^2 - b^2)), x] + Dist[1/(b*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*Simp[b*(a*A - b*B + a*C)*(m + 1) - (A*b^2 - a*b*B + a^2*C + b*(A*b
- a*B + b*C)*(m + 1))*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
C}, x] && LtQ[m, -1] && NeQ[a^2 - b^2, 0]
```

Rule 3941

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Int[((b + a*Sin[e + f*x])^m*(d + c*Sin[e + f
*x])^n)/Sin[e + f*x]^(m + n), x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && N
eQ[b*c - a*d, 0] && IntegerQ[m] && IntegerQ[n] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^3}{(c+d\sec(e+fx))^3}\,dx = \int \frac{(b+a\cos(e+fx))^3}{(d+c\cos(e+fx))^3}\,dx$$

$$= \frac{(bc-ad)^2(b+a\cos(e+fx))\sin(e+fx)}{2c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} + \frac{\int \frac{5ab^2c^2-4a^2bcd-2b^3cd+a^3d^2+\left(b^3c^2-2a^3cd-4ab^2c\ldots\right.}{(d+c\cos\ldots}}{2c\left(c^2\ldots\right.}$$

$$= \frac{(bc-ad)^2(b+a\cos(e+fx))\sin(e+fx)}{2c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} + \frac{(bc-ad)^2\left(5ac^2-3bcd-2ad^2\right)\sin(e+\ldots}{2c^2\left(c^2-d^2\right)^2f(d+c\cos(e+fx))}$$

$$= \frac{a^3x}{c^3} + \frac{(bc-ad)^2(b+a\cos(e+fx))\sin(e+fx)}{2c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} + \frac{(bc-ad)^2\left(5ac^2-3bcd-2ad^2\right)\mathrm{s}\ldots}{2c^2\left(c^2-d^2\right)^2f(d+c\cos(e+\ldots}$$

$$= \frac{a^3x}{c^3} + \frac{(bc-ad)^2(b+a\cos(e+fx))\sin(e+fx)}{2c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2} + \frac{(bc-ad)^2\left(5ac^2-3bcd-2ad^2\right)\mathrm{s}\ldots}{2c^2\left(c^2-d^2\right)^2f(d+c\cos(e+\ldots}$$

$$= \frac{a^3x}{c^3} + \frac{(bc-ad)\left(6a^2c^4+b^2c^4-8abc^3d-5a^2c^2d^2+2b^2c^2d^2+2abcd^3+2a^2d^4\right)\tanh\ldots}{c^3(c-d)^{5/2}(c+d)^{5/2}f}$$

Mathematica [B] time = 2.30, size = 517, normalized size = 2.04

$$\frac{2a^3c^6e+2a^3c^6fx+6a^3c^4d^2\sin(2(e+fx))+10a^3c^3d^3\sin(e+fx)+2a^3\left(c^3-cd^2\right)^2(e+fx)\cos(2(e+fx))-3a^3c^2d^4\sin(2(e+fx))-6a^3c^2d^4e-6a^3c^2d^4fx+8a^3cd\left(c^2\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])^3/(c + d*Sec[e + f*x])^3,x]
```

```
[Out] ((-4*(-9*a*b^2*c^4*d + 3*a^2*b*c^3*(2*c^2 + d^2) + b^3*c^3*(c^2 + 2*d^2) +
a^3*(-6*c^4*d + 5*c^2*d^3 - 2*d^5))*ArcTanh[((-c + d)*Tan[(e + f*x)/2])/Sqr
t[c^2 - d^2]])/(c^2 - d^2)^(5/2) + (2*a^3*c^6*e - 6*a^3*c^2*d^4*e + 4*a^3*d
^6*e + 2*a^3*c^6*f*x - 6*a^3*c^2*d^4*f*x + 4*a^3*d^6*f*x + 8*a^3*c*d*(c^2 -
 d^2)^2*(e + f*x)*Cos[e + f*x] + 2*a^3*(c^3 - c*d^2)^2*(e + f*x)*Cos[2*(e +
 f*x)] + 2*b^3*c^6*Sin[e + f*x] + 6*a*b^2*c^5*d*Sin[e + f*x] - 18*a^2*b*c^4
*d^2*Sin[e + f*x] - 8*b^3*c^4*d^2*Sin[e + f*x] + 10*a^3*c^3*d^3*Sin[e + f*x
] + 12*a*b^2*c^3*d^3*Sin[e + f*x] - 4*a^3*c*d^5*Sin[e + f*x] + 6*a*b^2*c^6*
Sin[2*(e + f*x)] - 12*a^2*b*c^5*d*Sin[2*(e + f*x)] - 3*b^3*c^5*d*Sin[2*(e +
 f*x)] + 6*a^3*c^4*d^2*Sin[2*(e + f*x)] + 3*a*b^2*c^4*d^2*Sin[2*(e + f*x)]
+ 3*a^2*b*c^3*d^3*Sin[2*(e + f*x)] - 3*a^3*c^2*d^4*Sin[2*(e + f*x)])/((c^2
- d^2)^2*(d + c*Cos[e + f*x])^2))/(4*c^3*f)
```

fricas [B] time = 0.68, size = 1629, normalized size = 6.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] [1/4*(4*(a^3*c^8 - 3*a^3*c^6*d^2 + 3*a^3*c^4*d^4 - a^3*c^2*d^6)*f*x*cos(f*x
 + e)^2 + 8*(a^3*c^7*d - 3*a^3*c^5*d^3 + 3*a^3*c^3*d^5 - a^3*c*d^7)*f*x*cos
(f*x + e) + 4*(a^3*c^6*d^2 - 3*a^3*c^4*d^4 + 3*a^3*c^2*d^6 - a^3*d^8)*f*x -
 (5*a^3*c^2*d^5 - 2*a^3*d^7 + (6*a^2*b + b^3)*c^5*d^2 - 3*(2*a^3 + 3*a*b^2)
*c^4*d^3 + (3*a^2*b + 2*b^3)*c^3*d^4 + (5*a^3*c^4*d^3 - 2*a^3*c^2*d^5 + (6*
a^2*b + b^3)*c^7 - 3*(2*a^3 + 3*a*b^2)*c^6*d + (3*a^2*b + 2*b^3)*c^5*d^2)*c
os(f*x + e)^2 + 2*(5*a^3*c^3*d^4 - 2*a^3*c*d^6 + (6*a^2*b + b^3)*c^6*d - 3*
(2*a^3 + 3*a*b^2)*c^5*d^2 + (3*a^2*b + 2*b^3)*c^4*d^3)*cos(f*x + e))*sqrt(c
^2 - d^2)*log((2*c*d*cos(f*x + e) - (c^2 - 2*d^2)*cos(f*x + e)^2 - 2*sqrt(c
^2 - d^2)*(d*cos(f*x + e) + c)*sin(f*x + e) + 2*c^2 - d^2)/(c^2*cos(f*x + e
)^2 + 2*c*d*cos(f*x + e) + d^2)) + 2*(b^3*c^8 + 3*a*b^2*c^7*d + 2*a^3*c*d^7
 - (9*a^2*b + 5*b^3)*c^6*d^2 + (5*a^3 + 3*a*b^2)*c^5*d^3 + (9*a^2*b + 4*b^3
)*c^4*d^4 - (7*a^3 + 6*a*b^2)*c^3*d^5 + 3*(2*a*b^2*c^8 - a^2*b*c^3*d^5 + a^
3*c^2*d^6 - (4*a^2*b + b^3)*c^7*d + (2*a^3 - a*b^2)*c^6*d^2 + (5*a^2*b + b^
3)*c^5*d^3 - (3*a^3 + a*b^2)*c^4*d^4)*cos(f*x + e))*sin(f*x + e))/((c^11 -
3*c^9*d^2 + 3*c^7*d^4 - c^5*d^6)*f*cos(f*x + e)^2 + 2*(c^10*d - 3*c^8*d^3 +
 3*c^6*d^5 - c^4*d^7)*f*cos(f*x + e) + (c^9*d^2 - 3*c^7*d^4 + 3*c^5*d^6 - c
^3*d^8)*f), 1/2*(2*(a^3*c^8 - 3*a^3*c^6*d^2 + 3*a^3*c^4*d^4 - a^3*c^2*d^6)*
f*x*cos(f*x + e)^2 + 4*(a^3*c^7*d - 3*a^3*c^5*d^3 + 3*a^3*c^3*d^5 - a^3*c*d
^7)*f*x*cos(f*x + e) + 2*(a^3*c^6*d^2 - 3*a^3*c^4*d^4 + 3*a^3*c^2*d^6 - a^3
*d^8)*f*x + (5*a^3*c^2*d^5 - 2*a^3*d^7 + (6*a^2*b + b^3)*c^5*d^2 - 3*(2*a^3
 + 3*a*b^2)*c^4*d^3 + (3*a^2*b + 2*b^3)*c^3*d^4 + (5*a^3*c^4*d^3 - 2*a^3*c^
2*d^5 + (6*a^2*b + b^3)*c^7 - 3*(2*a^3 + 3*a*b^2)*c^6*d + (3*a^2*b + 2*b^3)
*c^5*d^2)*cos(f*x + e)^2 + 2*(5*a^3*c^3*d^4 - 2*a^3*c*d^6 + (6*a^2*b + b^3)
*c^6*d - 3*(2*a^3 + 3*a*b^2)*c^5*d^2 + (3*a^2*b + 2*b^3)*c^4*d^3)*cos(f*x +
 e))*sqrt(-c^2 + d^2)*arctan(-sqrt(-c^2 + d^2)*(d*cos(f*x + e) + c)/((c^2 -
 d^2)*sin(f*x + e))) + (b^3*c^8 + 3*a*b^2*c^7*d + 2*a^3*c*d^7 - (9*a^2*b +
5*b^3)*c^6*d^2 + (5*a^3 + 3*a*b^2)*c^5*d^3 + (9*a^2*b + 4*b^3)*c^4*d^4 - (7
*a^3 + 6*a*b^2)*c^3*d^5 + 3*(2*a*b^2*c^8 - a^2*b*c^3*d^5 + a^3*c^2*d^6 - (4
*a^2*b + b^3)*c^7*d + (2*a^3 - a*b^2)*c^6*d^2 + (5*a^2*b + b^3)*c^5*d^3 - (
3*a^3 + a*b^2)*c^4*d^4)*cos(f*x + e))*sin(f*x + e))/((c^11 - 3*c^9*d^2 + 3*
c^7*d^4 - c^5*d^6)*f*cos(f*x + e)^2 + 2*(c^10*d - 3*c^8*d^3 + 3*c^6*d^5 - c
^4*d^7)*f*cos(f*x + e) + (c^9*d^2 - 3*c^7*d^4 + 3*c^5*d^6 - c^3*d^8)*f)]
```

giac [B] time = 1.61, size = 852, normalized size = 3.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] ((f*x + e)*a^3/c^3 + (6*a^2*b*c^5 + b^3*c^5 - 6*a^3*c^4*d - 9*a*b^2*c^4*d +
 3*a^2*b*c^3*d^2 + 2*b^3*c^3*d^2 + 5*a^3*c^2*d^3 - 2*a^3*d^5)*(pi*floor(1/2
*(f*x + e)/pi + 1/2)*sgn(-2*c + 2*d) + arctan(-(c*tan(1/2*f*x + 1/2*e) - d*
tan(1/2*f*x + 1/2*e))/sqrt(-c^2 + d^2)))/((c^7 - 2*c^5*d^2 + c^3*d^4)*sqrt(
-c^2 + d^2)) - (6*a*b^2*c^5*tan(1/2*f*x + 1/2*e)^3 - b^3*c^5*tan(1/2*f*x +
1/2*e)^3 - 12*a^2*b*c^4*d*tan(1/2*f*x + 1/2*e)^3 - 3*a*b^2*c^4*d*tan(1/2*f*
x + 1/2*e)^3 - 3*b^3*c^4*d*tan(1/2*f*x + 1/2*e)^3 + 6*a^3*c^3*d^2*tan(1/2*f
*x + 1/2*e)^3 + 9*a^2*b*c^3*d^2*tan(1/2*f*x + 1/2*e)^3 + 3*a*b^2*c^3*d^2*ta
n(1/2*f*x + 1/2*e)^3 + 4*b^3*c^3*d^2*tan(1/2*f*x + 1/2*e)^3 - 5*a^3*c^2*d^3
*tan(1/2*f*x + 1/2*e)^3 + 3*a^2*b*c^2*d^3*tan(1/2*f*x + 1/2*e)^3 - 6*a*b^2*
c^2*d^3*tan(1/2*f*x + 1/2*e)^3 - 3*a^3*c*d^4*tan(1/2*f*x + 1/2*e)^3 + 2*a^3
*d^5*tan(1/2*f*x + 1/2*e)^3 - 6*a*b^2*c^5*tan(1/2*f*x + 1/2*e) - b^3*c^5*ta
n(1/2*f*x + 1/2*e) + 12*a^2*b*c^4*d*tan(1/2*f*x + 1/2*e) - 3*a*b^2*c^4*d*ta
n(1/2*f*x + 1/2*e) + 3*b^3*c^4*d*tan(1/2*f*x + 1/2*e) - 6*a^3*c^3*d^2*tan(1
/2*f*x + 1/2*e) + 9*a^2*b*c^3*d^2*tan(1/2*f*x + 1/2*e) - 3*a*b^2*c^3*d^2*ta
n(1/2*f*x + 1/2*e) + 4*b^3*c^3*d^2*tan(1/2*f*x + 1/2*e) - 5*a^3*c^2*d^3*tan
(1/2*f*x + 1/2*e) - 3*a^2*b*c^2*d^3*tan(1/2*f*x + 1/2*e) - 6*a*b^2*c^2*d^3*
tan(1/2*f*x + 1/2*e) + 3*a^3*c*d^4*tan(1/2*f*x + 1/2*e) + 2*a^3*d^5*tan(1/2
*f*x + 1/2*e))/((c^6 - 2*c^4*d^2 + c^2*d^4)*(c*tan(1/2*f*x + 1/2*e)^2 - d*t
an(1/2*f*x + 1/2*e)^2 - c - d)^2))/f
```

maple [B] time = 0.72, size = 2031, normalized size = 8.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^3,x)
```

```
[Out] 2/f*a^3/c^3*arctan(tan(1/2*e+1/2*f*x))+12/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1
/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*b*d
-12/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2
*tan(1/2*e+1/2*f*x)*a^2*b*d-3/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x
)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a*b^2*d+6/f*c^2/(tan(1/2*e+1/
2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a
*b^2-4/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d
)^2*tan(1/2*e+1/2*f*x)*b^3*d-6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)
^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a*b^2*d^2+6/f/(tan(1
/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2
*f*x)*a*b^2*d^2+3/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(
c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a^2*b*d^2-3/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan
(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a*b^2
*d+3/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c
*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*b*d^2-9/f*c/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-
d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*b^2*d-1/f
/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d
^2)*tan(1/2*e+1/2*f*x)^3*a^3*d^3+2/f/c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+
1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^3*d^4-6/f*
c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+
d^2)*tan(1/2*e+1/2*f*x)^3*a*b^2+4/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2
*f*x)^2*d-c-d)^2/(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^3*d-1/f/c/(ta
n(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+
1/2*f*x)*a^3*d^3-2/f/c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d
)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a^3*d^4-6/f*c/(c^4-2*c^2*d^2+d^4)/((c+
d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^3*d
+1/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c-d)/(c^2+2
*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^3+1/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*
```

```
e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*b^3+3/f/(c^4-2*c^2*d
^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^
(1/2))*a^2*b*d^2-6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/
(c-d)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^3*d^2+6/f/(tan(1/2*e+1/2*f*x)^
2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^2/(c+d)/(c-d)^2*tan(1/2*e+1/2*f*x)*a^3*d^2+
5/f/c/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c
-d)/((c+d)*(c-d))^(1/2))*a^3*d^3-2/f/c^3/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^
(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^3*d^5+6/f*c^2
/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/(
(c+d)*(c-d))^(1/2))*a^2*b+1/f*c^2/(c^4-2*c^2*d^2+d^4)/((c+d)*(c-d))^(1/2)*a
rctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*b^3+2/f/(c^4-2*c^2*d^2
+d^4)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1
/2))*b^3*d^2
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [**B**] time = 14.50, size = 10759, normalized size = 42.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^3/(c + d/cos(e + f*x))^3,x)
```

```
[Out] (atan(((((8*tan(e/2 + (f*x)/2)*(4*a^6*c^10 + 8*a^6*d^10 + b^6*c^10 - 8*a^6*
c*d^9 - 8*a^6*c^9*d + 12*a^2*b^4*c^10 + 36*a^4*b^2*c^10 - 32*a^6*c^2*d^8 +
32*a^6*c^3*d^7 + 57*a^6*c^4*d^6 - 48*a^6*c^5*d^5 - 52*a^6*c^6*d^4 + 32*a^6*
c^7*d^3 + 24*a^6*c^8*d^2 + 4*b^6*c^6*d^4 + 4*b^6*c^8*d^2 - 36*a*b^5*c^7*d^3
 - 120*a^3*b^3*c^9*d - 12*a^5*b*c^3*d^7 + 6*a^5*b*c^5*d^5 + 24*a^5*b*c^7*d^
3 + 12*a^2*b^4*c^6*d^4 + 111*a^2*b^4*c^8*d^2 - 8*a^3*b^3*c^3*d^7 + 16*a^3*b
^3*c^5*d^5 - 68*a^3*b^3*c^7*d^3 + 36*a^4*b^2*c^4*d^6 - 81*a^4*b^2*c^6*d^4 +
 144*a^4*b^2*c^8*d^2 - 18*a*b^5*c^9*d - 72*a^5*b*c^9*d))/(c^10*d + c^11 - c
^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) + ((a*d -
 b*c)*((8*(4*a^3*c^15 + 2*b^3*c^15 + 12*a^2*b*c^15 - 12*a^3*c^14*d - 2*b^3*
c^14*d - 4*a^3*c^6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*c^8*d^7 - 4*a^3*c^9*d^6 - 3
6*a^3*c^10*d^5 + 6*a^3*c^11*d^4 + 34*a^3*c^12*d^3 - 8*a^3*c^13*d^2 - 4*b^3*
c^8*d^7 + 4*b^3*c^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3*c^11*d^4 + 18*a*b^2*c^9*d^
6 - 18*a*b^2*c^10*d^5 - 36*a*b^2*c^11*d^4 + 36*a*b^2*c^12*d^3 + 18*a*b^2*c^
13*d^2 - 6*a^2*b*c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*a^2*b*c^12*d^3 - 18*a^2*b*c
^13*d^2 - 18*a*b^2*c^14*d - 12*a^2*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^
7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (4*tan(e/2 + (f*
x)/2)*(a*d - b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*
c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d)*(8*c^15*d
- 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*
d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^
8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^
6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5*(c - d)^5)^
(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*
a*b*c*d^3 - 8*a*b*c^3*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10
*c^9*d^4 - 5*c^11*d^2)))*(a*d - b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4
 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*
```

b*c^3*d)*1i)/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)) + (((8*tan(e/2 + (f*x)/2)*(4*a^6*c^10 + 8*a^6*d^10 + b^6*c^10 - 8*a^6*c*d^9 - 8*a^6*c^9*d + 12*a^2*b^4*c^10 + 36*a^4*b^2*c^10 - 32*a^6*c^2*d^8 + 32*a^6*c^3*d^7 + 57*a^6*c^4*d^6 - 48*a^6*c^5*d^5 - 52*a^6*c^6*d^4 + 32*a^6*c^7*d^3 + 24*a^6*c^8*d^2 + 4*b^6*c^6*d^4 + 4*b^6*c^8*d^2 - 36*a*b^5*c^7*d^3 - 120*a^3*b^3*c^9*d - 12*a^5*b*c^3*d^7 + 6*a^5*b*c^5*d^5 + 24*a^5*b*c^7*d^3 + 12*a^2*b^4*c^6*d^4 + 111*a^2*b^4*c^8*d^2 - 8*a^3*b^3*c^3*d^7 + 16*a^3*b^3*c^5*d^5 - 68*a^3*b^3*c^7*d^3 + 36*a^4*b^2*c^4*d^6 - 81*a^4*b^2*c^6*d^4 + 144*a^4*b^2*c^8*d^2 - 18*a*b^5*c^9*d - 72*a^5*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) - ((a*d - b*c)*((8*(4*a^3*c^15 + 2*b^3*c^15 + 12*a^2*b*c^15 - 12*a^3*c^14*d - 2*b^3*c^14*d - 4*a^3*c^6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*c^8*d^7 - 4*a^3*c^9*d^6 - 36*a^3*c^10*d^5 + 6*a^3*c^11*d^4 + 34*a^3*c^12*d^3 - 8*a^3*c^13*d^2 - 4*b^3*c^8*d^7 + 4*b^3*c^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3*c^11*d^4 + 18*a*b^2*c^9*d^6 - 18*a*b^2*c^10*d^5 - 36*a*b^2*c^11*d^4 + 36*a*b^2*c^12*d^3 + 18*a*b^2*c^13*d^2 - 6*a^2*b*c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*a^2*b*c^12*d^3 - 18*a^2*b*c^13*d^2 - 18*a*b^2*c^14*d - 12*a^2*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (4*tan(e/2 + (f*x)/2)*(a*d - b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))*(a*d - b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d)*1i)/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)))/((16*(4*a^9*d^9 - 12*a^8*b*c^9 - 2*a^9*c*d^8 + 12*a^9*c^8*d + a^3*b^6*c^9 + 12*a^5*b^4*c^9 - 2*a^6*b^3*c^9 + 36*a^7*b^2*c^9 - 18*a^9*c^2*d^7 + 13*a^9*c^3*d^6 + 36*a^9*c^4*d^5 - 26*a^9*c^5*d^4 - 34*a^9*c^6*d^3 + 24*a^9*c^7*d^2 - 18*a^4*b^5*c^8*d - 118*a^6*b^3*c^8*d + 18*a^7*b^2*c^8*d - 6*a^8*b*c^2*d^7 - 6*a^8*b*c^3*d^6 + 6*a^8*b*c^4*d^5 + 6*a^8*b*c^6*d^3 + 18*a^8*b*c^7*d^2 + 4*a^3*b^6*c^5*d^4 + 4*a^3*b^6*c^7*d^2 - 36*a^4*b^5*c^6*d^3 + 12*a^5*b^4*c^5*d^4 + 111*a^5*b^4*c^7*d^2 - 4*a^6*b^3*c^2*d^7 - 4*a^6*b^3*c^3*d^6 + 10*a^6*b^3*c^4*d^5 + 6*a^6*b^3*c^5*d^4 - 68*a^6*b^3*c^6*d^3 + 18*a^7*b^2*c^3*d^6 + 18*a^7*b^2*c^4*d^5 - 45*a^7*b^2*c^5*d^4 - 36*a^7*b^2*c^6*d^3 + 126*a^7*b^2*c^7*d^2 - 60*a^8*b*c^8*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (((8*tan(e/2 + (f*x)/2)*(4*a^6*c^10 + 8*a^6*d^10 + b^6*c^10 - 8*a^6*c*d^9 - 8*a^6*c^9*d + 12*a^2*b^4*c^10 + 36*a^4*b^2*c^10 - 32*a^6*c^2*d^8 + 32*a^6*c^3*d^7 + 57*a^6*c^4*d^6 - 48*a^6*c^5*d^5 - 52*a^6*c^6*d^4 + 32*a^6*c^7*d^3 + 24*a^6*c^8*d^2 + 4*b^6*c^6*d^4 + 4*b^6*c^8*d^2 - 36*a*b^5*c^7*d^3 - 120*a^3*b^3*c^9*d - 12*a^5*b*c^3*d^7 + 6*a^5*b*c^5*d^5 + 24*a^5*b*c^7*d^3 + 12*a^2*b^4*c^6*d^4 + 111*a^2*b^4*c^8*d^2 - 8*a^3*b^3*c^3*d^7 + 16*a^3*b^3*c^5*d^5 - 68*a^3*b^3*c^7*d^3 + 36*a^4*b^2*c^4*d^6 - 81*a^4*b^2*c^6*d^4 + 144*a^4*b^2*c^8*d^2 - 18*a*b^5*c^9*d - 72*a^5*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) + ((a*d - b*c)*((8*(4*a^3*c^15 + 2*b^3*c^15 + 12*a^2*b*c^15 - 12*a^3*c^14*d - 2*b^3*c^14*d - 4*a^3*c^6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*c^8*d^7 - 4*a^3*c^9*d^6 - 36*a^3*c^10*d^5 + 6*a^3*c^11*d^4 + 34*a^3*c^12*d^3 - 8*a^3*c^13*d^2 - 4*b^3*c^8*d^7 + 4*b^3*c^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3*c^11*d^4 + 18*a*b^2*c^9*d^6 - 18*a*b^2*c^10*d^5 - 36*a*b^2*c^11*d^4 + 36*a*b^2*c^12*d^3 + 18*a*b^2*c^13*d^2 - 6*a^2*b*c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*a^2*b*c^12*d^3 - 18*a^2*b*c^13*d^2 - 18*a*b^2*c^14*d - 12*a^2*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (4*tan(e/2 + (f*x)/2)*(a*d - b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d)*(8*c^15*d - 8*c^6*d^10 + 8*c^7

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*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 -
32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*
c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^
7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2
*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^
3*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^
2)))*(a*d - b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c
^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d))/(2*(c^13 -
 c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)) + (((8*tan(e
/2 + (f*x)/2)*(4*a^6*c^10 + 8*a^6*d^10 + b^6*c^10 - 8*a^6*c*d^9 - 8*a^6*c^9
*d + 12*a^2*b^4*c^10 + 36*a^4*b^2*c^10 - 32*a^6*c^2*d^8 + 32*a^6*c^3*d^7 +
57*a^6*c^4*d^6 - 48*a^6*c^5*d^5 - 52*a^6*c^6*d^4 + 32*a^6*c^7*d^3 + 24*a^6*
c^8*d^2 + 4*b^6*c^6*d^4 + 4*b^6*c^8*d^2 - 36*a*b^5*c^7*d^3 - 120*a^3*b^3*c^
9*d - 12*a^5*b*c^3*d^7 + 6*a^5*b*c^5*d^5 + 24*a^5*b*c^7*d^3 + 12*a^2*b^4*c^
6*d^4 + 111*a^2*b^4*c^8*d^2 - 8*a^3*b^3*c^3*d^7 + 16*a^3*b^3*c^5*d^5 - 68*a
^3*b^3*c^7*d^3 + 36*a^4*b^2*c^4*d^6 - 81*a^4*b^2*c^6*d^4 + 144*a^4*b^2*c^8*
d^2 - 18*a*b^5*c^9*d - 72*a^5*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6
+ 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2) - ((a*d - b*c)*((8*(4*a^3*
c^15 + 2*b^3*c^15 + 12*a^2*b*c^15 - 12*a^3*c^14*d - 2*b^3*c^14*d - 4*a^3*c^
6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*c^8*d^7 - 4*a^3*c^9*d^6 - 36*a^3*c^10*d^5 +
6*a^3*c^11*d^4 + 34*a^3*c^12*d^3 - 8*a^3*c^13*d^2 - 4*b^3*c^8*d^7 + 4*b^3*c
^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3*c^11*d^4 + 18*a*b^2*c^9*d^6 - 18*a*b^2*c^10
*d^5 - 36*a*b^2*c^11*d^4 + 36*a*b^2*c^12*d^3 + 18*a*b^2*c^13*d^2 - 6*a^2*b*
c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*a^2*b*c^12*d^3 - 18*a^2*b*c^13*d^2 - 18*a*b^
2*c^14*d - 12*a^2*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5
 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (4*tan(e/2 + (f*x)/2)*(a*d - b*c)
*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d
^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d)*(8*c^15*d - 8*c^6*d^10 + 8*
c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4
 - 32*c^13*d^3 - 8*c^14*d^2))/((c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 +
10*c^9*d^4 - 5*c^11*d^2)*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3
*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4
+ 2*a^2*d^4 + b^2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b
*c^3*d))/(2*(c^13 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11
*d^2)))*(a*d - b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^
2*c^4 - 5*a^2*c^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d))/(2*(c^1
3 - c^3*d^10 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2))))*(a*d -
b*c)*((c + d)^5*(c - d)^5)^(1/2)*(6*a^2*c^4 + 2*a^2*d^4 + b^2*c^4 - 5*a^2*c
^2*d^2 + 2*b^2*c^2*d^2 + 2*a*b*c*d^3 - 8*a*b*c^3*d)*1i)/(f*(c^13 - c^3*d^10
 + 5*c^5*d^8 - 10*c^7*d^6 + 10*c^9*d^4 - 5*c^11*d^2)) - (2*a^3*atan(((a^3*(
(a^3*((8*(4*a^3*c^15 + 2*b^3*c^15 + 12*a^2*b*c^15 - 12*a^3*c^14*d - 2*b^3*c
^14*d - 4*a^3*c^6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*c^8*d^7 - 4*a^3*c^9*d^6 - 36
*a^3*c^10*d^5 + 6*a^3*c^11*d^4 + 34*a^3*c^12*d^3 - 8*a^3*c^13*d^2 - 4*b^3*c
^8*d^7 + 4*b^3*c^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3*c^11*d^4 + 18*a*b^2*c^9*d^6
 - 18*a*b^2*c^10*d^5 - 36*a*b^2*c^11*d^4 + 36*a*b^2*c^12*d^3 + 18*a*b^2*c^1
3*d^2 - 6*a^2*b*c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*a^2*b*c^12*d^3 - 18*a^2*b*c^
13*d^2 - 18*a*b^2*c^14*d - 12*a^2*b*c^14*d))/(c^12*d + c^13 - c^6*d^7 - c^7
*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) - (a^3*tan(e/2 + (f
*x)/2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^9*d^7 - 48*c^
10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2)*8i)/(c^3*(c^
10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9
*d^2)))*1i)/c^3 + (8*tan(e/2 + (f*x)/2)*(4*a^6*c^10 + 8*a^6*d^10 + b^6*c^10
 - 8*a^6*c*d^9 - 8*a^6*c^9*d + 12*a^2*b^4*c^10 + 36*a^4*b^2*c^10 - 32*a^6*c
^2*d^8 + 32*a^6*c^3*d^7 + 57*a^6*c^4*d^6 - 48*a^6*c^5*d^5 - 52*a^6*c^6*d^4
+ 32*a^6*c^7*d^3 + 24*a^6*c^8*d^2 + 4*b^6*c^6*d^4 + 4*b^6*c^8*d^2 - 36*a*b^
5*c^7*d^3 - 120*a^3*b^3*c^9*d - 12*a^5*b*c^3*d^7 + 6*a^5*b*c^5*d^5 + 24*a^5
*b*c^7*d^3 + 12*a^2*b^4*c^6*d^4 + 111*a^2*b^4*c^8*d^2 - 8*a^3*b^3*c^3*d^7 +
 16*a^3*b^3*c^5*d^5 - 68*a^3*b^3*c^7*d^3 + 36*a^4*b^2*c^4*d^6 - 81*a^4*b^2*
c^6*d^4 + 144*a^4*b^2*c^8*d^2 - 18*a*b^5*c^9*d - 72*a^5*b*c^9*d))/(c^10*d +
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 c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2))
)/c^3 - (a^3*((a^3*((8*(4*a^3*c^15 + 2*b^3*c^15 + 12*a^2*b*c^15 - 12*a^3*c^
14*d - 2*b^3*c^14*d - 4*a^3*c^6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*c^8*d^7 - 4*a^
3*c^9*d^6 - 36*a^3*c^10*d^5 + 6*a^3*c^11*d^4 + 34*a^3*c^12*d^3 - 8*a^3*c^13
*d^2 - 4*b^3*c^8*d^7 + 4*b^3*c^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3*c^11*d^4 + 18
*a*b^2*c^9*d^6 - 18*a*b^2*c^10*d^5 - 36*a*b^2*c^11*d^4 + 36*a*b^2*c^12*d^3
+ 18*a*b^2*c^13*d^2 - 6*a^2*b*c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*a^2*b*c^12*d^3
 - 18*a^2*b*c^13*d^2 - 18*a*b^2*c^14*d - 12*a^2*b*c^14*d))/(c^12*d + c^13 -
 c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (a^
3*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c
^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2
)*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c
^8*d^3 - 3*c^9*d^2)))*1i)/c^3 - (8*tan(e/2 + (f*x)/2)*(4*a^6*c^10 + 8*a^6*d
^10 + b^6*c^10 - 8*a^6*c*d^9 - 8*a^6*c^9*d + 12*a^2*b^4*c^10 + 36*a^4*b^2*c
^10 - 32*a^6*c^2*d^8 + 32*a^6*c^3*d^7 + 57*a^6*c^4*d^6 - 48*a^6*c^5*d^5 - 5
2*a^6*c^6*d^4 + 32*a^6*c^7*d^3 + 24*a^6*c^8*d^2 + 4*b^6*c^6*d^4 + 4*b^6*c^8
*d^2 - 36*a*b^5*c^7*d^3 - 120*a^3*b^3*c^9*d - 12*a^5*b*c^3*d^7 + 6*a^5*b*c^
5*d^5 + 24*a^5*b*c^7*d^3 + 12*a^2*b^4*c^6*d^4 + 111*a^2*b^4*c^8*d^2 - 8*a^3
*b^3*c^3*d^7 + 16*a^3*b^3*c^5*d^5 - 68*a^3*b^3*c^7*d^3 + 36*a^4*b^2*c^4*d^6
 - 81*a^4*b^2*c^6*d^4 + 144*a^4*b^2*c^8*d^2 - 18*a*b^5*c^9*d - 72*a^5*b*c^9
*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3
 - 3*c^9*d^2)))/c^3)/((a^3*((a^3*((8*(4*a^3*c^15 + 2*b^3*c^15 + 12*a^2*b*c^
15 - 12*a^3*c^14*d - 2*b^3*c^14*d - 4*a^3*c^6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*
c^8*d^7 - 4*a^3*c^9*d^6 - 36*a^3*c^10*d^5 + 6*a^3*c^11*d^4 + 34*a^3*c^12*d^
3 - 8*a^3*c^13*d^2 - 4*b^3*c^8*d^7 + 4*b^3*c^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3
*c^11*d^4 + 18*a*b^2*c^9*d^6 - 18*a*b^2*c^10*d^5 - 36*a*b^2*c^11*d^4 + 36*a
*b^2*c^12*d^3 + 18*a*b^2*c^13*d^2 - 6*a^2*b*c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*
a^2*b*c^12*d^3 - 18*a^2*b*c^13*d^2 - 18*a*b^2*c^14*d - 12*a^2*b*c^14*d))/(c
^12*d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c
^11*d^2) - (a^3*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*
c^8*d^8 - 32*c^9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^
3 - 8*c^14*d^2)*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3
*c^7*d^4 - 3*c^8*d^3 - 3*c^9*d^2)))*1i)/c^3 + (8*tan(e/2 + (f*x)/2)*(4*a^6*
c^10 + 8*a^6*d^10 + b^6*c^10 - 8*a^6*c*d^9 - 8*a^6*c^9*d + 12*a^2*b^4*c^10
+ 36*a^4*b^2*c^10 - 32*a^6*c^2*d^8 + 32*a^6*c^3*d^7 + 57*a^6*c^4*d^6 - 48*a
^6*c^5*d^5 - 52*a^6*c^6*d^4 + 32*a^6*c^7*d^3 + 24*a^6*c^8*d^2 + 4*b^6*c^6*d
^4 + 4*b^6*c^8*d^2 - 36*a*b^5*c^7*d^3 - 120*a^3*b^3*c^9*d - 12*a^5*b*c^3*d^
7 + 6*a^5*b*c^5*d^5 + 24*a^5*b*c^7*d^3 + 12*a^2*b^4*c^6*d^4 + 111*a^2*b^4*c
^8*d^2 - 8*a^3*b^3*c^3*d^7 + 16*a^3*b^3*c^5*d^5 - 68*a^3*b^3*c^7*d^3 + 36*a
^4*b^2*c^4*d^6 - 81*a^4*b^2*c^6*d^4 + 144*a^4*b^2*c^8*d^2 - 18*a*b^5*c^9*d
- 72*a^5*b*c^9*d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d
^4 - 3*c^8*d^3 - 3*c^9*d^2))*1i)/c^3 - (16*(4*a^9*d^9 - 12*a^8*b*c^9 - 2*a^
9*c*d^8 + 12*a^9*c^8*d + a^3*b^6*c^9 + 12*a^5*b^4*c^9 - 2*a^6*b^3*c^9 + 36*
a^7*b^2*c^9 - 18*a^9*c^2*d^7 + 13*a^9*c^3*d^6 + 36*a^9*c^4*d^5 - 26*a^9*c^5
*d^4 - 34*a^9*c^6*d^3 + 24*a^9*c^7*d^2 - 18*a^4*b^5*c^8*d - 118*a^6*b^3*c^8
*d + 18*a^7*b^2*c^8*d - 6*a^8*b*c^2*d^7 - 6*a^8*b*c^3*d^6 + 6*a^8*b*c^4*d^5
 + 6*a^8*b*c^6*d^3 + 18*a^8*b*c^7*d^2 + 4*a^3*b^6*c^5*d^4 + 4*a^3*b^6*c^7*d
^2 - 36*a^4*b^5*c^6*d^3 + 12*a^5*b^4*c^5*d^4 + 111*a^5*b^4*c^7*d^2 - 4*a^6*
b^3*c^2*d^7 - 4*a^6*b^3*c^3*d^6 + 10*a^6*b^3*c^4*d^5 + 6*a^6*b^3*c^5*d^4 -
68*a^6*b^3*c^6*d^3 + 18*a^7*b^2*c^3*d^6 + 18*a^7*b^2*c^4*d^5 - 45*a^7*b^2*c
^5*d^4 - 36*a^7*b^2*c^6*d^3 + 126*a^7*b^2*c^7*d^2 - 60*a^8*b*c^8*d))/(c^12*
d + c^13 - c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*
d^2) + (a^3*((a^3*((8*(4*a^3*c^15 + 2*b^3*c^15 + 12*a^2*b*c^15 - 12*a^3*c^1
4*d - 2*b^3*c^14*d - 4*a^3*c^6*d^9 + 2*a^3*c^7*d^8 + 18*a^3*c^8*d^7 - 4*a^3
*c^9*d^6 - 36*a^3*c^10*d^5 + 6*a^3*c^11*d^4 + 34*a^3*c^12*d^3 - 8*a^3*c^13*
d^2 - 4*b^3*c^8*d^7 + 4*b^3*c^9*d^6 + 6*b^3*c^10*d^5 - 6*b^3*c^11*d^4 + 18*
a*b^2*c^9*d^6 - 18*a*b^2*c^10*d^5 - 36*a*b^2*c^11*d^4 + 36*a*b^2*c^12*d^3 +
 18*a*b^2*c^13*d^2 - 6*a^2*b*c^8*d^7 + 6*a^2*b*c^9*d^6 + 18*a^2*b*c^12*d^3
- 18*a^2*b*c^13*d^2 - 18*a*b^2*c^14*d - 12*a^2*b*c^14*d))/(c^12*d + c^13 -
```

```
c^6*d^7 - c^7*d^6 + 3*c^8*d^5 + 3*c^9*d^4 - 3*c^10*d^3 - 3*c^11*d^2) + (a^3
*tan(e/2 + (f*x)/2)*(8*c^15*d - 8*c^6*d^10 + 8*c^7*d^9 + 32*c^8*d^8 - 32*c^
9*d^7 - 48*c^10*d^6 + 48*c^11*d^5 + 32*c^12*d^4 - 32*c^13*d^3 - 8*c^14*d^2)
*8i)/(c^3*(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^
8*d^3 - 3*c^9*d^2)))*1i)/c^3 - (8*tan(e/2 + (f*x)/2)*(4*a^6*c^10 + 8*a^6*d^
10 + b^6*c^10 - 8*a^6*c*d^9 - 8*a^6*c^9*d + 12*a^2*b^4*c^10 + 36*a^4*b^2*c^
10 - 32*a^6*c^2*d^8 + 32*a^6*c^3*d^7 + 57*a^6*c^4*d^6 - 48*a^6*c^5*d^5 - 52
*a^6*c^6*d^4 + 32*a^6*c^7*d^3 + 24*a^6*c^8*d^2 + 4*b^6*c^6*d^4 + 4*b^6*c^8*
d^2 - 36*a*b^5*c^7*d^3 - 120*a^3*b^3*c^9*d - 12*a^5*b*c^3*d^7 + 6*a^5*b*c^5
*d^5 + 24*a^5*b*c^7*d^3 + 12*a^2*b^4*c^6*d^4 + 111*a^2*b^4*c^8*d^2 - 8*a^3*
b^3*c^3*d^7 + 16*a^3*b^3*c^5*d^5 - 68*a^3*b^3*c^7*d^3 + 36*a^4*b^2*c^4*d^6
- 81*a^4*b^2*c^6*d^4 + 144*a^4*b^2*c^8*d^2 - 18*a*b^5*c^9*d - 72*a^5*b*c^9*
d))/(c^10*d + c^11 - c^4*d^7 - c^5*d^6 + 3*c^6*d^5 + 3*c^7*d^4 - 3*c^8*d^3
- 3*c^9*d^2))*1i)/c^3)))/(c^3*f) - ((tan(e/2 + (f*x)/2)^3*(2*a^3*d^4 + b^3*
c^4 - 6*a*b^2*c^4 - a^3*c*d^3 + 4*b^3*c^3*d - 6*a^3*c^2*d^2 - 6*a*b^2*c^2*d
^2 + 3*a^2*b*c^2*d^2 - 3*a*b^2*c^3*d + 12*a^2*b*c^3*d))/((c^2*d - c^3)*(c +
 d)^2) + (tan(e/2 + (f*x)/2)*(2*a^3*d^4 - b^3*c^4 - 6*a*b^2*c^4 + a^3*c*d^3
 + 4*b^3*c^3*d - 6*a^3*c^2*d^2 - 6*a*b^2*c^2*d^2 - 3*a^2*b*c^2*d^2 + 3*a*b^
2*c^3*d + 12*a^2*b*c^3*d))/((c + d)*(c^4 - 2*c^3*d + c^2*d^2)))/(f*(2*c*d -
 tan(e/2 + (f*x)/2)^2*(2*c^2 - 2*d^2) + tan(e/2 + (f*x)/2)^4*(c^2 - 2*c*d +
 d^2) + c^2 + d^2))
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^3}{\left(c+d\sec\left(e+fx\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**3/(c+d*sec(f*x+e))**3,x)
```

```
[Out] Integral((a + b*sec(e + f*x))**3/(c + d*sec(e + f*x))**3, x)
```

3.196 $\int \frac{(a+b\sec(e+fx))^3}{(c+d\sec(e+fx))^4}\,dx$

Optimal. Leaf size=412

$$\frac{a^3x}{c^4}-\frac{(bc-ad)\left(a^2\left(34c^4d-28c^2d^3+9d^5\right)-abc\left(18c^4+17c^2d^2-5d^4\right)+b^2c^2d\left(13c^2+2d^2\right)\right)\sin(e+fx)}{6c^3f\left(c^2-d^2\right)^3(c\cos(e+fx)+d)}-\frac{\left(a^3\left(8c\right.\right.}{}$$

```
[Out] a^3*x/c^4-1/3*d*(-a*d+b*c)*(b+a*cos(f*x+e))^2*sin(f*x+e)/c/(c^2-d^2)/f/(d+c
*cos(f*x+e))^3+1/6*(-a*d+b*c)^2*(-8*a*c^2*d+3*a*d^3+3*b*c^3+2*b*c*d^2)*sin(
f*x+e)/c^3/(c^2-d^2)^2/f/(d+c*cos(f*x+e))^2-1/6*(-a*d+b*c)*(b^2*c^2*d*(13*c
^2+2*d^2)-a*b*c*(18*c^4+17*c^2*d^2-5*d^4)+a^2*(34*c^4*d-28*c^2*d^3+9*d^5))*
sin(f*x+e)/c^3/(c^2-d^2)^3/f/(d+c*cos(f*x+e))-(3*a*b^2*c^4*d*(4*c^2+d^2)-b^
3*c^5*(c^2+4*d^2)-a^2*b*(6*c^7+9*c^5*d^2)+a^3*(8*c^6*d-8*c^4*d^3+7*c^2*d^5-
2*d^7))*arctanh((c-d)^(1/2)*tan(1/2*e+1/2*f*x)/(c+d)^(1/2))/c^4/(c^2-d^2)^3
/f/(c-d)^(1/2)/(c+d)^(1/2)
```

Rubi [A] time = 1.06, antiderivative size = 412, 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 = {3941, 2989, 3031, 3021, 2735, 2659, 208}

$$-\frac{(bc-ad)\left(a^2\left(-28c^2d^3+34c^4d+9d^5\right)-abc\left(17c^2d^2+18c^4-5d^4\right)+b^2c^2d\left(13c^2+2d^2\right)\right)\sin(e+fx)}{6c^3f\left(c^2-d^2\right)^3(c\cos(e+fx)+d)}-\frac{\left(-a^2b\left(9\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^3/(c + d*Sec[e + f*x])^4,x]
```

```
[Out] (a^3*x)/c^4 - ((3*a*b^2*c^4*d*(4*c^2 + d^2) - b^3*c^5*(c^2 + 4*d^2) - a^2*b
*(6*c^7 + 9*c^5*d^2) + a^3*(8*c^6*d - 8*c^4*d^3 + 7*c^2*d^5 - 2*d^7))*ArcTa
nh[(Sqrt[c - d]*Tan[(e + f*x)/2])/Sqrt[c + d]])/(c^4*Sqrt[c - d]*Sqrt[c + d
]*(c^2 - d^2)^3*f) - (d*(b*c - a*d)*(b + a*Cos[e + f*x])^2*Sin[e + f*x])/(3
*c*(c^2 - d^2)*f*(d + c*Cos[e + f*x])^3) + ((b*c - a*d)^2*(3*b*c^3 - 8*a*c^
2*d + 2*b*c*d^2 + 3*a*d^3)*Sin[e + f*x])/(6*c^3*(c^2 - d^2)^2*f*(d + c*Cos[
e + f*x])^2) - ((b*c - a*d)*(b^2*c^2*d*(13*c^2 + 2*d^2) - a*b*c*(18*c^4 + 1
7*c^2*d^2 - 5*d^4) + a^2*(34*c^4*d - 28*c^2*d^3 + 9*d^5))*Sin[e + f*x])/(6*
c^3*(c^2 - d^2)^3*f*(d + c*Cos[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2989

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -S
imp[((b*c - a*d)*(B*c - A*d)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m - 1)*(c +
 d*Sin[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)
*(c^2 - d^2)), Int[(a + b*Sin[e + f*x])^(m - 2)*(c + d*Sin[e + f*x])^(n + 1
)*Simp[b*(b*c - a*d)*(B*c - A*d)*(m - 1) + a*d*(a*A*c + b*B*c - (A*b + a*B)
*d)*(n + 1) + (b*(b*d*(B*c - A*d) + a*(A*c*d + B*(c^2 - 2*d^2)))*(n + 1) -
a*(b*c - a*d)*(B*c - A*d)*(n + 2))*Sin[e + f*x] + b*(d*(A*b*c + a*B*c - a*A
*d)*(m + n + 1) - b*B*(c^2*m + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x] /;
FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0
] && NeQ[c^2 - d^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 3021

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((A*b^2
 - a*b*B + a^2*C)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 1)*(
a^2 - b^2)), x] + Dist[1/(b*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*Simp[b*(a*A - b*B + a*C)*(m + 1) - (A*b^2 - a*b*B + a^2*C + b*(A*b
- a*B + b*C)*(m + 1))*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
C}, x] && LtQ[m, -1] && NeQ[a^2 - b^2, 0]
```

Rule 3031

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(A*b^2 - a*b*B + a^2*C)*Cos[e
 + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b^2*f*(m + 1)*(a^2 - b^2)), x] - Dis
t[1/(b^2*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^(m + 1)*Simp[b*(m +
 1)*((b*B - a*C)*(b*c - a*d) - A*b*(a*c - b*d)) + (b*B*(a^2*d + b^2*d*(m +
1) - a*b*c*(m + 2)) + (b*c - a*d)*(A*b^2*(m + 2) + C*(a^2 + b^2*(m + 1))))*
Sin[e + f*x] - b*C*d*(m + 1)*(a^2 - b^2)*Sin[e + f*x]^2, x], x], x] /; Free
Q[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
 && LtQ[m, -1]
```

Rule 3941

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Int[((b + a*Sin[e + f*x])^m*(d + c*Sin[e + f
*x])^n)/Sin[e + f*x]^(m + n), x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && N
eQ[b*c - a*d, 0] && IntegerQ[m] && IntegerQ[n] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^3}{(c+d\sec(e+fx))^4}\,dx = \int \frac{\cos(e+fx)(b+a\cos(e+fx))^3}{(d+c\cos(e+fx))^4}\,dx$$

$$= -\frac{d(bc-ad)(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} + \frac{\int \frac{(b+a\cos(e+fx))\left((3bc-2ad)(bc-ad)-\left(3a^2cd+2b\right.\right.}{(d+c}}{3c}$$

$$= -\frac{d(bc-ad)(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} + \frac{(bc-ad)^2\left(3bc^3-8ac^2d+2bcd^2+3a\right.}{6c^3\left(c^2-d^2\right)^2 f(d+c\cos(e\right.}$$

$$= -\frac{d(bc-ad)(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} + \frac{(bc-ad)^2\left(3bc^3-8ac^2d+2bcd^2+3a\right.}{6c^3\left(c^2-d^2\right)^2 f(d+c\cos(e\right.}$$

$$= \frac{a^3x}{c^4} - \frac{d(bc-ad)(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} + \frac{(bc-ad)^2\left(3bc^3-8ac^2d+2bcd\right.}{6c^3\left(c^2-d^2\right)^2 f(d+c\,c\right.}$$

$$= \frac{a^3x}{c^4} - \frac{d(bc-ad)(b+a\cos(e+fx))^2\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3} + \frac{(bc-ad)^2\left(3bc^3-8ac^2d+2bcd\right.}{6c^3\left(c^2-d^2\right)^2 f(d+c\,c\right.}$$

$$= \frac{a^3x}{c^4} - \frac{\left(3ab^2c^4d\left(4c^2+d^2\right)-b^3c^5\left(c^2+4d^2\right)-a^2b\left(6c^7+9c^5d^2\right)+a^3\left(8c^6d-8c^4d^3\right.\right.}{c^4\sqrt{c-d}\,\sqrt{c+d}\,\left(c^2-d^2\right)^3 f}$$

Mathematica [A] time = 3.78, size = 459, normalized size = 1.11

$$\frac{\sec(e+fx)(a+b\sec(e+fx))^3(c\cos(e+fx)+d)\left(6a^3(e+fx)(c\cos(e+fx)+d)^3+\frac{c\left(a^3\left(36c^4d^2-32c^2d^4+11d^6\right)-3a^2bcd\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])^3/(c + d*Sec[e + f*x])^4,x]
```

```
[Out] ((d + c*Cos[e + f*x])*Sec[e + f*x]*(a + b*Sec[e + f*x])^3*(6*a^3*(e + f*x)*
(d + c*Cos[e + f*x])^3 - (6*(-3*a*b^2*c^4*d*(4*c^2 + d^2) + b^3*c^5*(c^2 +
4*d^2) + a^2*b*(6*c^7 + 9*c^5*d^2) + a^3*(-8*c^6*d + 8*c^4*d^3 - 7*c^2*d^5
+ 2*d^7))*ArcTanh[((-c + d)*Tan[(e + f*x)/2])/Sqrt[c^2 - d^2]]*(d + c*Cos[e
 + f*x])^3)/(c^2 - d^2)^(7/2) - (2*c*d*(b*c - a*d)^3*Sin[e + f*x])/(c^2 - d
^2) + (c*(b*c - a*d)^2*(3*b*c^3 - 12*a*c^2*d + 2*b*c*d^2 + 7*a*d^3)*(d + c*
Cos[e + f*x])*Sin[e + f*x])/(c^2 - d^2)^2 + (c*(-(b^3*c^3*d*(13*c^2 + 2*d^2
)) + 3*a*b^2*c^2*(6*c^4 + 10*c^2*d^2 - d^4) - 3*a^2*b*c*d*(18*c^4 - 5*c^2*d
^2 + 2*d^4) + a^3*(36*c^4*d^2 - 32*c^2*d^4 + 11*d^6))*(d + c*Cos[e + f*x])^
2*Sin[e + f*x])/(c^2 - d^2)^3))/(6*c^4*f*(b + a*Cos[e + f*x])^3*(c + d*Sec[
e + f*x])^4)
```

fricas [B] time = 0.81, size = 2776, normalized size = 6.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^4,x, algorithm="fricas")
```

```
[Out] [1/12*(12*(a^3*c^11 - 4*a^3*c^9*d^2 + 6*a^3*c^7*d^4 - 4*a^3*c^5*d^6 + a^3*c
^3*d^8)*f*x*cos(f*x + e)^3 + 36*(a^3*c^10*d - 4*a^3*c^8*d^3 + 6*a^3*c^6*d^5
 - 4*a^3*c^4*d^7 + a^3*c^2*d^9)*f*x*cos(f*x + e)^2 + 36*(a^3*c^9*d^2 - 4*a^
3*c^7*d^4 + 6*a^3*c^5*d^6 - 4*a^3*c^3*d^8 + a^3*c*d^10)*f*x*cos(f*x + e) +
12*(a^3*c^8*d^3 - 4*a^3*c^6*d^5 + 6*a^3*c^4*d^7 - 4*a^3*c^2*d^9 + a^3*d^11)
*f*x + 3*(7*a^3*c^2*d^8 - 2*a^3*d^10 - (6*a^2*b + b^3)*c^7*d^3 + 4*(2*a^3 +
 3*a*b^2)*c^6*d^4 - (9*a^2*b + 4*b^3)*c^5*d^5 - (8*a^3 - 3*a*b^2)*c^4*d^6 +
 (7*a^3*c^5*d^5 - 2*a^3*c^3*d^7 - (6*a^2*b + b^3)*c^10 + 4*(2*a^3 + 3*a*b^2
)*c^9*d - (9*a^2*b + 4*b^3)*c^8*d^2 - (8*a^3 - 3*a*b^2)*c^7*d^3)*cos(f*x +
e)^3 + 3*(7*a^3*c^4*d^6 - 2*a^3*c^2*d^8 - (6*a^2*b + b^3)*c^9*d + 4*(2*a^3
+ 3*a*b^2)*c^8*d^2 - (9*a^2*b + 4*b^3)*c^7*d^3 - (8*a^3 - 3*a*b^2)*c^6*d^4)
*cos(f*x + e)^2 + 3*(7*a^3*c^3*d^7 - 2*a^3*c*d^9 - (6*a^2*b + b^3)*c^8*d^2
+ 4*(2*a^3 + 3*a*b^2)*c^7*d^3 - (9*a^2*b + 4*b^3)*c^6*d^4 - (8*a^3 - 3*a*b^
2)*c^5*d^5)*cos(f*x + e))*sqrt(c^2 - d^2)*log((2*c*d*cos(f*x + e) - (c^2 -
2*d^2)*cos(f*x + e)^2 - 2*sqrt(c^2 - d^2)*(d*cos(f*x + e) + c)*sin(f*x + e)
 + 2*c^2 - d^2)/(c^2*cos(f*x + e)^2 + 2*c*d*cos(f*x + e) + d^2)) + 2*(b^3*c
^10*d + 6*a*b^2*c^9*d^2 + 23*a^3*c^3*d^8 - 6*a^3*c*d^10 - 11*(3*a^2*b + b^3
)*c^8*d^3 + (26*a^3 + 33*a*b^2)*c^7*d^4 + (21*a^2*b + 4*b^3)*c^6*d^5 - (43*
a^3 + 39*a*b^2)*c^5*d^6 + 6*(2*a^2*b + b^3)*c^4*d^7 + (18*a*b^2*c^11 + 6*a^
2*b*c^4*d^7 - 11*a^3*c^3*d^8 - (54*a^2*b + 13*b^3)*c^10*d + 12*(3*a^3 + a*b
^2)*c^9*d^2 + (69*a^2*b + 11*b^3)*c^8*d^3 - (68*a^3 + 33*a*b^2)*c^7*d^4 - (
21*a^2*b - 2*b^3)*c^6*d^5 + (43*a^3 + 3*a*b^2)*c^5*d^6)*cos(f*x + e)^2 + 3*
(b^3*c^11 + 6*a*b^2*c^10*d - 5*a^3*c^2*d^9 - (27*a^2*b + 10*b^3)*c^9*d^2 +
(20*a^3 + 21*a*b^2)*c^8*d^3 + (24*a^2*b + 7*b^3)*c^7*d^4 - 5*(7*a^3 + 6*a*b
^2)*c^6*d^5 + (3*a^2*b + 2*b^3)*c^5*d^6 + (20*a^3 + 3*a*b^2)*c^4*d^7)*cos(f
*x + e))*sin(f*x + e))/((c^15 - 4*c^13*d^2 + 6*c^11*d^4 - 4*c^9*d^6 + c^7*d
^8)*f*cos(f*x + e)^3 + 3*(c^14*d - 4*c^12*d^3 + 6*c^10*d^5 - 4*c^8*d^7 + c^
6*d^9)*f*cos(f*x + e)^2 + 3*(c^13*d^2 - 4*c^11*d^4 + 6*c^9*d^6 - 4*c^7*d^8
+ c^5*d^10)*f*cos(f*x + e) + (c^12*d^3 - 4*c^10*d^5 + 6*c^8*d^7 - 4*c^6*d^9
 + c^4*d^11)*f), 1/6*(6*(a^3*c^11 - 4*a^3*c^9*d^2 + 6*a^3*c^7*d^4 - 4*a^3*c
^5*d^6 + a^3*c^3*d^8)*f*x*cos(f*x + e)^3 + 18*(a^3*c^10*d - 4*a^3*c^8*d^3 +
 6*a^3*c^6*d^5 - 4*a^3*c^4*d^7 + a^3*c^2*d^9)*f*x*cos(f*x + e)^2 + 18*(a^3*
c^9*d^2 - 4*a^3*c^7*d^4 + 6*a^3*c^5*d^6 - 4*a^3*c^3*d^8 + a^3*c*d^10)*f*x*c
os(f*x + e) + 6*(a^3*c^8*d^3 - 4*a^3*c^6*d^5 + 6*a^3*c^4*d^7 - 4*a^3*c^2*d^
9 + a^3*d^11)*f*x - 3*(7*a^3*c^2*d^8 - 2*a^3*d^10 - (6*a^2*b + b^3)*c^7*d^3
 + 4*(2*a^3 + 3*a*b^2)*c^6*d^4 - (9*a^2*b + 4*b^3)*c^5*d^5 - (8*a^3 - 3*a*b
^2)*c^4*d^6 + (7*a^3*c^5*d^5 - 2*a^3*c^3*d^7 - (6*a^2*b + b^3)*c^10 + 4*(2*
a^3 + 3*a*b^2)*c^9*d - (9*a^2*b + 4*b^3)*c^8*d^2 - (8*a^3 - 3*a*b^2)*c^7*d^
3)*cos(f*x + e)^3 + 3*(7*a^3*c^4*d^6 - 2*a^3*c^2*d^8 - (6*a^2*b + b^3)*c^9*
d + 4*(2*a^3 + 3*a*b^2)*c^8*d^2 - (9*a^2*b + 4*b^3)*c^7*d^3 - (8*a^3 - 3*a*
b^2)*c^6*d^4)*cos(f*x + e)^2 + 3*(7*a^3*c^3*d^7 - 2*a^3*c*d^9 - (6*a^2*b +
b^3)*c^8*d^2 + 4*(2*a^3 + 3*a*b^2)*c^7*d^3 - (9*a^2*b + 4*b^3)*c^6*d^4 - (8
*a^3 - 3*a*b^2)*c^5*d^5)*cos(f*x + e))*sqrt(-c^2 + d^2)*arctan(-sqrt(-c^2 +
 d^2)*(d*cos(f*x + e) + c)/((c^2 - d^2)*sin(f*x + e))) + (b^3*c^10*d + 6*a*
b^2*c^9*d^2 + 23*a^3*c^3*d^8 - 6*a^3*c*d^10 - 11*(3*a^2*b + b^3)*c^8*d^3 +
(26*a^3 + 33*a*b^2)*c^7*d^4 + (21*a^2*b + 4*b^3)*c^6*d^5 - (43*a^3 + 39*a*b
^2)*c^5*d^6 + 6*(2*a^2*b + b^3)*c^4*d^7 + (18*a*b^2*c^11 + 6*a^2*b*c^4*d^7
- 11*a^3*c^3*d^8 - (54*a^2*b + 13*b^3)*c^10*d + 12*(3*a^3 + a*b^2)*c^9*d^2
+ (69*a^2*b + 11*b^3)*c^8*d^3 - (68*a^3 + 33*a*b^2)*c^7*d^4 - (21*a^2*b - 2
*b^3)*c^6*d^5 + (43*a^3 + 3*a*b^2)*c^5*d^6)*cos(f*x + e)^2 + 3*(b^3*c^11 +
6*a*b^2*c^10*d - 5*a^3*c^2*d^9 - (27*a^2*b + 10*b^3)*c^9*d^2 + (20*a^3 + 21
*a*b^2)*c^8*d^3 + (24*a^2*b + 7*b^3)*c^7*d^4 - 5*(7*a^3 + 6*a*b^2)*c^6*d^5
+ (3*a^2*b + 2*b^3)*c^5*d^6 + (20*a^3 + 3*a*b^2)*c^4*d^7)*cos(f*x + e))*sin
(f*x + e))/((c^15 - 4*c^13*d^2 + 6*c^11*d^4 - 4*c^9*d^6 + c^7*d^8)*f*cos(f*
x + e)^3 + 3*(c^14*d - 4*c^12*d^3 + 6*c^10*d^5 - 4*c^8*d^7 + c^6*d^9)*f*cos
(f*x + e)^2 + 3*(c^13*d^2 - 4*c^11*d^4 + 6*c^9*d^6 - 4*c^7*d^8 + c^5*d^10)*
f*cos(f*x + e) + (c^12*d^3 - 4*c^10*d^5 + 6*c^8*d^7 - 4*c^6*d^9 + c^4*d^11)
*f)]
```

giac [B] time = 0.93, size = 1639, normalized size = 3.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^4,x, algorithm="giac")
```

```
[Out] 1/3*(3*(6*a^2*b*c^7 + b^3*c^7 - 8*a^3*c^6*d - 12*a*b^2*c^6*d + 9*a^2*b*c^5*
d^2 + 4*b^3*c^5*d^2 + 8*a^3*c^4*d^3 - 3*a*b^2*c^4*d^3 - 7*a^3*c^2*d^5 + 2*a
^3*d^7)*(pi*floor(1/2*(f*x + e)/pi + 1/2)*sgn(-2*c + 2*d) + arctan(-(c*tan(
1/2*f*x + 1/2*e) - d*tan(1/2*f*x + 1/2*e))/sqrt(-c^2 + d^2)))/((c^10 - 3*c^
8*d^2 + 3*c^6*d^4 - c^4*d^6)*sqrt(-c^2 + d^2)) + 3*(f*x + e)*a^3/c^4 - (18*
a*b^2*c^8*tan(1/2*f*x + 1/2*e)^5 - 3*b^3*c^8*tan(1/2*f*x + 1/2*e)^5 - 54*a^
2*b*c^7*d*tan(1/2*f*x + 1/2*e)^5 - 18*a*b^2*c^7*d*tan(1/2*f*x + 1/2*e)^5 -
12*b^3*c^7*d*tan(1/2*f*x + 1/2*e)^5 + 36*a^3*c^6*d^2*tan(1/2*f*x + 1/2*e)^5
 + 81*a^2*b*c^6*d^2*tan(1/2*f*x + 1/2*e)^5 + 36*a*b^2*c^6*d^2*tan(1/2*f*x +
 1/2*e)^5 + 27*b^3*c^6*d^2*tan(1/2*f*x + 1/2*e)^5 - 60*a^3*c^5*d^3*tan(1/2*
f*x + 1/2*e)^5 - 18*a^2*b*c^5*d^3*tan(1/2*f*x + 1/2*e)^5 - 81*a*b^2*c^5*d^3
*tan(1/2*f*x + 1/2*e)^5 - 12*b^3*c^5*d^3*tan(1/2*f*x + 1/2*e)^5 - 6*a^3*c^4
*d^4*tan(1/2*f*x + 1/2*e)^5 + 9*a^2*b*c^4*d^4*tan(1/2*f*x + 1/2*e)^5 + 36*a
*b^2*c^4*d^4*tan(1/2*f*x + 1/2*e)^5 + 6*b^3*c^4*d^4*tan(1/2*f*x + 1/2*e)^5
+ 45*a^3*c^3*d^5*tan(1/2*f*x + 1/2*e)^5 - 18*a^2*b*c^3*d^5*tan(1/2*f*x + 1/
2*e)^5 + 9*a*b^2*c^3*d^5*tan(1/2*f*x + 1/2*e)^5 - 6*b^3*c^3*d^5*tan(1/2*f*x
 + 1/2*e)^5 - 6*a^3*c^2*d^6*tan(1/2*f*x + 1/2*e)^5 - 15*a^3*c*d^7*tan(1/2*f
*x + 1/2*e)^5 + 6*a^3*d^8*tan(1/2*f*x + 1/2*e)^5 - 36*a*b^2*c^8*tan(1/2*f*x
 + 1/2*e)^3 + 108*a^2*b*c^7*d*tan(1/2*f*x + 1/2*e)^3 + 28*b^3*c^7*d*tan(1/2
*f*x + 1/2*e)^3 - 72*a^3*c^6*d^2*tan(1/2*f*x + 1/2*e)^3 - 48*a*b^2*c^6*d^2*
tan(1/2*f*x + 1/2*e)^3 - 96*a^2*b*c^5*d^3*tan(1/2*f*x + 1/2*e)^3 - 16*b^3*c
^5*d^3*tan(1/2*f*x + 1/2*e)^3 + 116*a^3*c^4*d^4*tan(1/2*f*x + 1/2*e)^3 + 84
*a*b^2*c^4*d^4*tan(1/2*f*x + 1/2*e)^3 - 12*a^2*b*c^3*d^5*tan(1/2*f*x + 1/2*
e)^3 - 12*b^3*c^3*d^5*tan(1/2*f*x + 1/2*e)^3 - 56*a^3*c^2*d^6*tan(1/2*f*x +
 1/2*e)^3 + 12*a^3*d^8*tan(1/2*f*x + 1/2*e)^3 + 18*a*b^2*c^8*tan(1/2*f*x +
1/2*e) + 3*b^3*c^8*tan(1/2*f*x + 1/2*e) - 54*a^2*b*c^7*d*tan(1/2*f*x + 1/2*
e) + 18*a*b^2*c^7*d*tan(1/2*f*x + 1/2*e) - 12*b^3*c^7*d*tan(1/2*f*x + 1/2*e
) + 36*a^3*c^6*d^2*tan(1/2*f*x + 1/2*e) - 81*a^2*b*c^6*d^2*tan(1/2*f*x + 1/
2*e) + 36*a*b^2*c^6*d^2*tan(1/2*f*x + 1/2*e) - 27*b^3*c^6*d^2*tan(1/2*f*x +
 1/2*e) + 60*a^3*c^5*d^3*tan(1/2*f*x + 1/2*e) - 18*a^2*b*c^5*d^3*tan(1/2*f*
x + 1/2*e) + 81*a*b^2*c^5*d^3*tan(1/2*f*x + 1/2*e) - 12*b^3*c^5*d^3*tan(1/2
*f*x + 1/2*e) - 6*a^3*c^4*d^4*tan(1/2*f*x + 1/2*e) - 9*a^2*b*c^4*d^4*tan(1/
2*f*x + 1/2*e) + 36*a*b^2*c^4*d^4*tan(1/2*f*x + 1/2*e) - 6*b^3*c^4*d^4*tan(
1/2*f*x + 1/2*e) - 45*a^3*c^3*d^5*tan(1/2*f*x + 1/2*e) - 18*a^2*b*c^3*d^5*t
an(1/2*f*x + 1/2*e) - 9*a*b^2*c^3*d^5*tan(1/2*f*x + 1/2*e) - 6*b^3*c^3*d^5*
tan(1/2*f*x + 1/2*e) - 6*a^3*c^2*d^6*tan(1/2*f*x + 1/2*e) + 15*a^3*c*d^7*ta
n(1/2*f*x + 1/2*e) + 6*a^3*d^8*tan(1/2*f*x + 1/2*e))/((c^9 - 3*c^7*d^2 + 3*
c^5*d^4 - c^3*d^6)*(c*tan(1/2*f*x + 1/2*e)^2 - d*tan(1/2*f*x + 1/2*e)^2 - c
 - d)^3))/f
```

maple [B] time = 0.76, size = 4330, normalized size = 10.51

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^4,x)
```

```
[Out] -12/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*
c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^3*d^2-4/f/(tan(1/2*e+1/2*f*x)^2*c-t
an(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*
f*x)^3*a^2*b*d^3+6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/
(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^2*b*d^3+24/f*c/(tan(
```

```
1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d
+d^2)*tan(1/2*e+1/2*f*x)^3*a^3*d^2-44/3/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2
*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3
*a^3*d^4+4/f/c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2
-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a^3*d^6+3/f/(tan(1/2*e+1/2
*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan
(1/2*e+1/2*f*x)*a*b^2*d^3-3/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*
d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a*b^2*d^3-6/f
*c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2
*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a*b^2+6/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-ta
n(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f
*x)*b^3*d-2/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)
/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*b^3*d^2-12/f*c/(tan(1/2*e+1/2
*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan
(1/2*e+1/2*f*x)^5*a^3*d^2+6/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^
2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^3*d^4+1/f
/c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2
*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^3*d^5-2/f/c^3/(tan(1/2*e+1/2*f*x)^2*
c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1
/2*f*x)^5*a^3*d^6-6/f*c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-
d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a*b^2-28/3/f*c^2/
(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+
2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^3*d+6/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1
/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)
^5*b^3*d+2/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/
(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*b^3*d^2+9/f*c/(c^6-3*c^4*d^2
+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)
*(c-d))^(1/2))*a^2*b*d^2-12/f*c^2/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d
))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a*b^2*d+12/f
*c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/
(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*a*b^2+6/f/(tan(1/2*e+1/2*f*x)^2*c-tan(
1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x
)*a^2*b*d^3+6/f/c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+
d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^3*d^4-1/f/c^2/(tan(1/2*e+
1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*
tan(1/2*e+1/2*f*x)*a^3*d^5-2/f/c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*
x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^3*d^6+2/
f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+
3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*b^3*d^3-4/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2
*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5
*a^3*d^3+2/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c
^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*b^3*d^3-3/f/(c^6-3*c^4*d^2+3*c
^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-
d))^(1/2))*a*b^2*d^3-8/f*c^2/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1
/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^3*d+2/f/c^4/(c^
6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(
c-d)/((c+d)*(c-d))^(1/2))*a^3*d^7+1/f*c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e
+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*b
^3-1/f*c^3/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3
-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*b^3-7/f/c^2/(c^6-3*c^4*d^2+3*c^2*d
^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^
(1/2))*a^3*d^5+6/f*c^3/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*ar
ctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^2*b+4/f*c/(c^6-3*c^4*
d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c
+d)*(c-d))^(1/2))*b^3*d^2-4/f/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*
d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*e+1/2*f*x)^3*b^3*d^3+4/f/(
tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c
*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^3*d^3+2/f*a^3/c^4*arctan(tan(1/2*e+1/2*f*x))
+18/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-
```

```
3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a^2*b*d+28/f*c/(tan(1/2*e+1/2*f*x)^
2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*d+d^2)*tan(1/2*e
+1/2*f*x)^3*a*b^2*d^2+6/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*
d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a*b^2*d-18/f*c/
(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*
c*d^2-d^3)*tan(1/2*e+1/2*f*x)*a*b^2*d^2-6/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan
(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*
x)^5*a*b^2*d-18/f*c/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(
c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a*b^2*d^2-36/f*c^2/(tan
(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c^2-2*c*d+d^2)/(c^2+2*c*
d+d^2)*tan(1/2*e+1/2*f*x)^3*a^2*b*d+8/f/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d
)*(c-d))^(1/2)*arctanh(tan(1/2*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*a^3*d^
3+1/f*c^3/(c^6-3*c^4*d^2+3*c^2*d^4-d^6)/((c+d)*(c-d))^(1/2)*arctanh(tan(1/2
*e+1/2*f*x)*(c-d)/((c+d)*(c-d))^(1/2))*b^3+9/f*c/(tan(1/2*e+1/2*f*x)^2*c-ta
n(1/2*e+1/2*f*x)^2*d-c-d)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f
*x)^5*a^2*b*d^2+18/f*c^2/(tan(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d
)^3/(c-d)/(c^3+3*c^2*d+3*c*d^2+d^3)*tan(1/2*e+1/2*f*x)^5*a^2*b*d-9/f*c/(tan
(1/2*e+1/2*f*x)^2*c-tan(1/2*e+1/2*f*x)^2*d-c-d)^3/(c+d)/(c^3-3*c^2*d+3*c*d^
2-d^3)*tan(1/2*e+1/2*f*x)*a^2*b*d^2
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [**B**] time = 16.09, size = 15647, normalized size = 37.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^3/(c + d/cos(e + f*x))^4,x)
```

```
[Out] ((tan(e/2 + (f*x)/2)^5*(b^3*c^6 - 2*a^3*d^6 - 6*a*b^2*c^6 + a^3*c*d^5 + 6*b
^3*c^5*d + 6*a^3*c^2*d^4 - 4*a^3*c^3*d^3 - 12*a^3*c^4*d^2 + 2*b^3*c^3*d^3 +
 2*b^3*c^4*d^2 - 3*a*b^2*c^3*d^3 - 18*a*b^2*c^4*d^2 + 6*a^2*b*c^3*d^3 + 9*a
^2*b*c^4*d^2 - 6*a*b^2*c^5*d + 18*a^2*b*c^5*d))/((c^3*d - c^4)*(c + d)^3) +
 (4*tan(e/2 + (f*x)/2)^3*(7*b^3*c^5*d - 9*a*b^2*c^6 - 3*a^3*d^6 + 11*a^3*c^
2*d^4 - 18*a^3*c^4*d^2 + 3*b^3*c^3*d^3 - 21*a*b^2*c^4*d^2 + 3*a^2*b*c^3*d^3
 + 27*a^2*b*c^5*d))/(3*(c + d)^2*(c^5 - 2*c^4*d + c^3*d^2)) - (tan(e/2 + (f
*x)/2)*(2*a^3*d^6 + b^3*c^6 + 6*a*b^2*c^6 + a^3*c*d^5 - 6*b^3*c^5*d - 6*a^3
*c^2*d^4 - 4*a^3*c^3*d^3 + 12*a^3*c^4*d^2 - 2*b^3*c^3*d^3 + 2*b^3*c^4*d^2 -
 3*a*b^2*c^3*d^3 + 18*a*b^2*c^4*d^2 - 6*a^2*b*c^3*d^3 + 9*a^2*b*c^4*d^2 - 6
*a*b^2*c^5*d - 18*a^2*b*c^5*d))/((c + d)*(3*c^5*d - c^6 + c^3*d^3 - 3*c^4*d
^2)))/(f*(tan(e/2 + (f*x)/2)^2*(3*c*d^2 - 3*c^2*d - 3*c^3 + 3*d^3) - tan(e/
2 + (f*x)/2)^4*(3*c*d^2 + 3*c^2*d - 3*c^3 - 3*d^3) + 3*c*d^2 + 3*c^2*d + c^
3 + d^3 - tan(e/2 + (f*x)/2)^6*(3*c*d^2 - 3*c^2*d + c^3 - d^3))) - (2*a^3*a
tan(((a^3*((a^3*((8*(4*a^3*c^21 + 2*b^3*c^21 + 12*a^2*b*c^21 - 16*a^3*c^20*
d - 2*b^3*c^20*d - 4*a^3*c^8*d^13 + 2*a^3*c^9*d^12 + 26*a^3*c^10*d^11 - 14*
a^3*c^11*d^10 - 70*a^3*c^12*d^9 + 30*a^3*c^13*d^8 + 110*a^3*c^14*d^7 - 30*a
^3*c^15*d^6 - 110*a^3*c^16*d^5 + 20*a^3*c^17*d^4 + 64*a^3*c^18*d^3 - 12*a^3
*c^19*d^2 + 8*b^3*c^12*d^9 - 8*b^3*c^13*d^8 - 22*b^3*c^14*d^7 + 22*b^3*c^15
*d^6 + 18*b^3*c^16*d^5 - 18*b^3*c^17*d^4 - 2*b^3*c^18*d^3 + 2*b^3*c^19*d^2
- 6*a*b^2*c^11*d^10 + 6*a*b^2*c^12*d^9 - 6*a*b^2*c^13*d^8 + 6*a*b^2*c^14*d^
```

7 + 54*a*b^2*c^15*d^6 - 54*a*b^2*c^16*d^5 - 66*a*b^2*c^17*d^4 + 66*a*b^2*c^
18*d^3 + 24*a*b^2*c^19*d^2 + 18*a^2*b*c^12*d^9 - 18*a^2*b*c^13*d^8 - 42*a^2
*b*c^14*d^7 + 42*a^2*b*c^15*d^6 + 18*a^2*b*c^16*d^5 - 18*a^2*b*c^17*d^4 + 1
8*a^2*b*c^18*d^3 - 18*a^2*b*c^19*d^2 - 24*a*b^2*c^20*d - 12*a^2*b*c^20*d))/
(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d
^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (
a^3*tan(e/2 + (f*x)/2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 -
48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7
- 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2)*8i)
/(c^4*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^1
0*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2))
)*1i)/c^4 + (8*tan(e/2 + (f*x)/2)*(4*a^6*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a
^6*c*d^13 - 8*a^6*c^13*d + 12*a^2*b^4*c^14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d
^12 + 48*a^6*c^3*d^11 + 117*a^6*c^4*d^10 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^
8 + 160*a^6*c^7*d^7 + 156*a^6*c^8*d^6 - 120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 +
48*a^6*c^11*d^3 + 44*a^6*c^12*d^2 + 16*b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*
a*b^5*c^9*d^5 - 102*a*b^5*c^11*d^3 - 160*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9
- 102*a^5*b*c^7*d^7 + 60*a^5*b*c^9*d^5 - 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*
d^6 + 144*a^2*b^4*c^10*d^4 + 210*a^2*b^4*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52
*a^3*b^3*c^7*d^7 - 4*a^3*b^3*c^9*d^5 - 300*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^
4*d^10 - 6*a^4*b^2*c^6*d^8 + 120*a^4*b^2*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 30
0*a^4*b^2*c^12*d^2 - 24*a*b^5*c^13*d - 96*a^5*b*c^13*d))/(c^16*d + c^17 - c
^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10
*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))/c^4 - (a^3*((a^3*((8*(
4*a^3*c^21 + 2*b^3*c^21 + 12*a^2*b*c^21 - 16*a^3*c^20*d - 2*b^3*c^20*d - 4*
a^3*c^8*d^13 + 2*a^3*c^9*d^12 + 26*a^3*c^10*d^11 - 14*a^3*c^11*d^10 - 70*a^
3*c^12*d^9 + 30*a^3*c^13*d^8 + 110*a^3*c^14*d^7 - 30*a^3*c^15*d^6 - 110*a^3
*c^16*d^5 + 20*a^3*c^17*d^4 + 64*a^3*c^18*d^3 - 12*a^3*c^19*d^2 + 8*b^3*c^1
2*d^9 - 8*b^3*c^13*d^8 - 22*b^3*c^14*d^7 + 22*b^3*c^15*d^6 + 18*b^3*c^16*d^
5 - 18*b^3*c^17*d^4 - 2*b^3*c^18*d^3 + 2*b^3*c^19*d^2 - 6*a*b^2*c^11*d^10 +
6*a*b^2*c^12*d^9 - 6*a*b^2*c^13*d^8 + 6*a*b^2*c^14*d^7 + 54*a*b^2*c^15*d^6
- 54*a*b^2*c^16*d^5 - 66*a*b^2*c^17*d^4 + 66*a*b^2*c^18*d^3 + 24*a*b^2*c^1
9*d^2 + 18*a^2*b*c^12*d^9 - 18*a^2*b*c^13*d^8 - 42*a^2*b*c^14*d^7 + 42*a^2*
b*c^15*d^6 + 18*a^2*b*c^16*d^5 - 18*a^2*b*c^17*d^4 + 18*a^2*b*c^18*d^3 - 18
*a^2*b*c^19*d^2 - 24*a*b^2*c^20*d - 12*a^2*b*c^20*d))/(c^19*d + c^20 - c^9*
d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10
*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) + (a^3*tan(e/2 + (f*x)/2
)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c
^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*
c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2)*8i)/(c^4*(c^16*d + c^17
- c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 +
10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*1i)/c^4 - (8*tan(e/
2 + (f*x)/2)*(4*a^6*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a^6*c*d^13 - 8*a^6*c^1
3*d + 12*a^2*b^4*c^14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d^12 + 48*a^6*c^3*d^11
+ 117*a^6*c^4*d^10 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^8 + 160*a^6*c^7*d^7 +
156*a^6*c^8*d^6 - 120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 + 48*a^6*c^11*d^3 + 44
*a^6*c^12*d^2 + 16*b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*a*b^5*c^9*d^5 - 102*a
*b^5*c^11*d^3 - 160*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9 - 102*a^5*b*c^7*d^7 +
60*a^5*b*c^9*d^5 - 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*d^6 + 144*a^2*b^4*c^1
0*d^4 + 210*a^2*b^4*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52*a^3*b^3*c^7*d^7 - 4*
a^3*b^3*c^9*d^5 - 300*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^4*d^10 - 6*a^4*b^2*c^
6*d^8 + 120*a^4*b^2*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 300*a^4*b^2*c^12*d^2 -
24*a*b^5*c^13*d - 96*a^5*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 +
5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d
^4 - 5*c^14*d^3 - 5*c^15*d^2)))/c^4)/((a^3*((a^3*((8*(4*a^3*c^21 + 2*b^3*c^
21 + 12*a^2*b*c^21 - 16*a^3*c^20*d - 2*b^3*c^20*d - 4*a^3*c^8*d^13 + 2*a^3*
c^9*d^12 + 26*a^3*c^10*d^11 - 14*a^3*c^11*d^10 - 70*a^3*c^12*d^9 + 30*a^3*c
^13*d^8 + 110*a^3*c^14*d^7 - 30*a^3*c^15*d^6 - 110*a^3*c^16*d^5 + 20*a^3*c^
17*d^4 + 64*a^3*c^18*d^3 - 12*a^3*c^19*d^2 + 8*b^3*c^12*d^9 - 8*b^3*c^13*d^

8 - 22*b^3*c^14*d^7 + 22*b^3*c^15*d^6 + 18*b^3*c^16*d^5 - 18*b^3*c^17*d^4 - 2*b^3*c^18*d^3 + 2*b^3*c^19*d^2 - 6*a*b^2*c^11*d^10 + 6*a*b^2*c^12*d^9 - 6*a*b^2*c^13*d^8 + 6*a*b^2*c^14*d^7 + 54*a*b^2*c^15*d^6 - 54*a*b^2*c^16*d^5 - 66*a*b^2*c^17*d^4 + 66*a*b^2*c^18*d^3 + 24*a*b^2*c^19*d^2 + 18*a^2*b*c^12*d^9 - 18*a^2*b*c^13*d^8 - 42*a^2*b*c^14*d^7 + 42*a^2*b*c^15*d^6 + 18*a^2*b*c^16*d^5 - 18*a^2*b*c^17*d^4 + 18*a^2*b*c^18*d^3 - 18*a^2*b*c^19*d^2 - 24*a*b^2*c^20*d - 12*a^2*b*c^20*d))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (a^3*tan(e/2 + (f*x)/2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2)*8i)/(c^4*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*1i)/c^4 + (8*tan(e/2 + (f*x)/2)*(4*a^6*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a^6*c*d^13 - 8*a^6*c^13*d + 12*a^2*b^4*c^14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d^12 + 48*a^6*c^3*d^11 + 117*a^6*c^4*d^10 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^8 + 160*a^6*c^7*d^7 + 156*a^6*c^8*d^6 - 120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 + 48*a^6*c^11*d^3 + 44*a^6*c^12*d^2 + 16*b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*a*b^5*c^9*d^5 - 102*a*b^5*c^11*d^3 - 160*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9 - 102*a^5*b*c^7*d^7 + 60*a^5*b*c^9*d^5 - 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*d^6 + 144*a^2*b^4*c^10*d^4 + 210*a^2*b^4*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52*a^3*b^3*c^7*d^7 - 4*a^3*b^3*c^9*d^5 - 300*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^4*d^10 - 6*a^4*b^2*c^6*d^8 + 120*a^4*b^2*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 300*a^4*b^2*c^12*d^2 - 24*a*b^5*c^13*d - 96*a^5*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2))*1i)/c^4 - (16*(4*a^9*d^13 - 12*a^8*b*c^13 - 2*a^9*c*d^12 + 16*a^9*c^12*d + a^3*b^6*c^13 + 12*a^5*b^4*c^13 - 2*a^6*b^3*c^13 + 36*a^7*b^2*c^13 - 26*a^9*c^2*d^11 + 11*a^9*c^3*d^10 + 70*a^9*c^4*d^9 - 34*a^9*c^5*d^8 - 110*a^9*c^6*d^7 + 66*a^9*c^7*d^6 + 110*a^9*c^8*d^5 - 64*a^9*c^9*d^4 - 64*a^9*c^10*d^3 + 48*a^9*c^11*d^2 - 24*a^4*b^5*c^12*d - 158*a^6*b^3*c^12*d + 24*a^7*b^2*c^12*d + 18*a^8*b*c^4*d^9 + 18*a^8*b*c^5*d^8 - 60*a^8*b*c^6*d^7 - 42*a^8*b*c^7*d^6 + 42*a^8*b*c^8*d^5 + 18*a^8*b*c^9*d^4 - 66*a^8*b*c^10*d^3 + 18*a^8*b*c^11*d^2 + 16*a^3*b^6*c^9*d^4 + 8*a^3*b^6*c^11*d^2 - 24*a^4*b^5*c^8*d^5 - 102*a^4*b^5*c^10*d^3 + 9*a^5*b^4*c^7*d^6 + 144*a^5*b^4*c^9*d^4 + 210*a^5*b^4*c^11*d^2 + 8*a^6*b^3*c^4*d^9 + 8*a^6*b^3*c^5*d^8 - 30*a^6*b^3*c^6*d^7 - 22*a^6*b^3*c^7*d^6 - 22*a^6*b^3*c^8*d^5 + 18*a^6*b^3*c^9*d^4 - 298*a^6*b^3*c^10*d^3 - 2*a^6*b^3*c^11*d^2 - 6*a^7*b^2*c^3*d^10 - 6*a^7*b^2*c^4*d^9 - 6*a^7*b^2*c^6*d^7 + 66*a^7*b^2*c^7*d^6 + 54*a^7*b^2*c^8*d^5 + 3*a^7*b^2*c^9*d^4 - 66*a^7*b^2*c^10*d^3 + 276*a^7*b^2*c^11*d^2 - 84*a^8*b*c^12*d))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) + (a^3*((a^3*((8*(4*a^3*c^21 + 2*b^3*c^21 + 12*a^2*b*c^21 - 16*a^3*c^20*d - 2*b^3*c^20*d - 4*a^3*c^8*d^13 + 2*a^3*c^9*d^12 + 26*a^3*c^10*d^11 - 14*a^3*c^11*d^10 - 70*a^3*c^12*d^9 + 30*a^3*c^13*d^8 + 110*a^3*c^14*d^7 - 30*a^3*c^15*d^6 - 110*a^3*c^16*d^5 + 20*a^3*c^17*d^4 + 64*a^3*c^18*d^3 - 12*a^3*c^19*d^2 + 8*b^3*c^12*d^9 - 8*b^3*c^13*d^8 - 22*b^3*c^14*d^7 + 22*b^3*c^15*d^6 + 18*b^3*c^16*d^5 - 18*b^3*c^17*d^4 - 2*b^3*c^18*d^3 + 2*b^3*c^19*d^2 - 6*a*b^2*c^11*d^10 + 6*a*b^2*c^12*d^9 - 6*a*b^2*c^13*d^8 + 6*a*b^2*c^14*d^7 + 54*a*b^2*c^15*d^6 - 54*a*b^2*c^16*d^5 - 66*a*b^2*c^17*d^4 + 66*a*b^2*c^18*d^3 + 24*a*b^2*c^19*d^2 + 18*a^2*b*c^12*d^9 - 18*a^2*b*c^13*d^8 - 42*a^2*b*c^14*d^7 + 42*a^2*b*c^15*d^6 + 18*a^2*b*c^16*d^5 - 18*a^2*b*c^17*d^4 + 18*a^2*b*c^18*d^3 - 18*a^2*b*c^19*d^2 - 24*a*b^2*c^20*d - 12*a^2*b*c^20*d))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) + (a^3*tan(e/2 + (f*x)/2)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2)*8i)/(c^4*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 -

10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*1i)/c
^4 - (8*tan(e/2 + (f*x)/2)*(4*a^6*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a^6*c*d^
13 - 8*a^6*c^13*d + 12*a^2*b^4*c^14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d^12 + 4
8*a^6*c^3*d^11 + 117*a^6*c^4*d^10 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^8 + 160
*a^6*c^7*d^7 + 156*a^6*c^8*d^6 - 120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 + 48*a^6
*c^11*d^3 + 44*a^6*c^12*d^2 + 16*b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*a*b^5*c
^9*d^5 - 102*a*b^5*c^11*d^3 - 160*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9 - 102*a
^5*b*c^7*d^7 + 60*a^5*b*c^9*d^5 - 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*d^6 + 1
44*a^2*b^4*c^10*d^4 + 210*a^2*b^4*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52*a^3*b^
3*c^7*d^7 - 4*a^3*b^3*c^9*d^5 - 300*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^4*d^10
- 6*a^4*b^2*c^6*d^8 + 120*a^4*b^2*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 300*a^4*b
^2*c^12*d^2 - 24*a*b^5*c^13*d - 96*a^5*b*c^13*d))/(c^16*d + c^17 - c^6*d^11
- c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d
^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2))*1i)/c^4)))/(c^4*f) + (atan((((
(8*tan(e/2 + (f*x)/2)*(4*a^6*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a^6*c*d^13 -
8*a^6*c^13*d + 12*a^2*b^4*c^14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d^12 + 48*a^6
*c^3*d^11 + 117*a^6*c^4*d^10 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^8 + 160*a^6*
c^7*d^7 + 156*a^6*c^8*d^6 - 120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 + 48*a^6*c^11
*d^3 + 44*a^6*c^12*d^2 + 16*b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*a*b^5*c^9*d^
5 - 102*a*b^5*c^11*d^3 - 160*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9 - 102*a^5*b*
c^7*d^7 + 60*a^5*b*c^9*d^5 - 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*d^6 + 144*a^
2*b^4*c^10*d^4 + 210*a^2*b^4*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52*a^3*b^3*c^7
*d^7 - 4*a^3*b^3*c^9*d^5 - 300*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^4*d^10 - 6*a
^4*b^2*c^6*d^8 + 120*a^4*b^2*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 300*a^4*b^2*c^
12*d^2 - 24*a*b^5*c^13*d - 96*a^5*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^
7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 +
10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2) + (((8*(4*a^3*c^21 + 2*b^3*c^21 + 12
*a^2*b*c^21 - 16*a^3*c^20*d - 2*b^3*c^20*d - 4*a^3*c^8*d^13 + 2*a^3*c^9*d^1
2 + 26*a^3*c^10*d^11 - 14*a^3*c^11*d^10 - 70*a^3*c^12*d^9 + 30*a^3*c^13*d^8
+ 110*a^3*c^14*d^7 - 30*a^3*c^15*d^6 - 110*a^3*c^16*d^5 + 20*a^3*c^17*d^4
+ 64*a^3*c^18*d^3 - 12*a^3*c^19*d^2 + 8*b^3*c^12*d^9 - 8*b^3*c^13*d^8 - 22*
b^3*c^14*d^7 + 22*b^3*c^15*d^6 + 18*b^3*c^16*d^5 - 18*b^3*c^17*d^4 - 2*b^3*
c^18*d^3 + 2*b^3*c^19*d^2 - 6*a*b^2*c^11*d^10 + 6*a*b^2*c^12*d^9 - 6*a*b^2*
c^13*d^8 + 6*a*b^2*c^14*d^7 + 54*a*b^2*c^15*d^6 - 54*a*b^2*c^16*d^5 - 66*a*
b^2*c^17*d^4 + 66*a*b^2*c^18*d^3 + 24*a*b^2*c^19*d^2 + 18*a^2*b*c^12*d^9 -
18*a^2*b*c^13*d^8 - 42*a^2*b*c^14*d^7 + 42*a^2*b*c^15*d^6 + 18*a^2*b*c^16*d
^5 - 18*a^2*b*c^17*d^4 + 18*a^2*b*c^18*d^3 - 18*a^2*b*c^19*d^2 - 24*a*b^2*c
^20*d - 12*a^2*b*c^20*d))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^
9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*
c^17*d^3 - 5*c^18*d^2) - (4*tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1/2)*
(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^
4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d)
*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^
12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c
^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c^
6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2
)*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^
7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*((
c + d)^7*(c - d)^7)^(1/2)*(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d
- 7*a^3*c^2*d^5 + 8*a^3*c^4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b
*c^5*d^2 - 12*a*b^2*c^6*d))/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10
+ 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)))*((c + d)^7*(c - d
)^7)^(1/2)*(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5
+ 8*a^3*c^4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a
*b^2*c^6*d)*1i)/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^
8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)) + (((8*tan(e/2 + (f*x)/2)*(4*a
^6*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a^6*c*d^13 - 8*a^6*c^13*d + 12*a^2*b^4*
c^14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d^12 + 48*a^6*c^3*d^11 + 117*a^6*c^4*d^
10 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^8 + 160*a^6*c^7*d^7 + 156*a^6*c^8*d^6

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- 120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 + 48*a^6*c^11*d^3 + 44*a^6*c^12*d^2 + 1
6*b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*a*b^5*c^9*d^5 - 102*a*b^5*c^11*d^3 - 1
60*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9 - 102*a^5*b*c^7*d^7 + 60*a^5*b*c^9*d^5
 - 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*d^6 + 144*a^2*b^4*c^10*d^4 + 210*a^2*b
^4*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52*a^3*b^3*c^7*d^7 - 4*a^3*b^3*c^9*d^5 -
 300*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^4*d^10 - 6*a^4*b^2*c^6*d^8 + 120*a^4*b
^2*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 300*a^4*b^2*c^12*d^2 - 24*a*b^5*c^13*d -
 96*a^5*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9
*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 -
 5*c^15*d^2) - (((8*(4*a^3*c^21 + 2*b^3*c^21 + 12*a^2*b*c^21 - 16*a^3*c^20*
d - 2*b^3*c^20*d - 4*a^3*c^8*d^13 + 2*a^3*c^9*d^12 + 26*a^3*c^10*d^11 - 14*
a^3*c^11*d^10 - 70*a^3*c^12*d^9 + 30*a^3*c^13*d^8 + 110*a^3*c^14*d^7 - 30*a
^3*c^15*d^6 - 110*a^3*c^16*d^5 + 20*a^3*c^17*d^4 + 64*a^3*c^18*d^3 - 12*a^3
*c^19*d^2 + 8*b^3*c^12*d^9 - 8*b^3*c^13*d^8 - 22*b^3*c^14*d^7 + 22*b^3*c^15
*d^6 + 18*b^3*c^16*d^5 - 18*b^3*c^17*d^4 - 2*b^3*c^18*d^3 + 2*b^3*c^19*d^2
- 6*a*b^2*c^11*d^10 + 6*a*b^2*c^12*d^9 - 6*a*b^2*c^13*d^8 + 6*a*b^2*c^14*d^
7 + 54*a*b^2*c^15*d^6 - 54*a*b^2*c^16*d^5 - 66*a*b^2*c^17*d^4 + 66*a*b^2*c^
18*d^3 + 24*a*b^2*c^19*d^2 + 18*a^2*b*c^12*d^9 - 18*a^2*b*c^13*d^8 - 42*a^2
*b*c^14*d^7 + 42*a^2*b*c^15*d^6 + 18*a^2*b*c^16*d^5 - 18*a^2*b*c^17*d^4 + 1
8*a^2*b*c^18*d^3 - 18*a^2*b*c^19*d^2 - 24*a*b^2*c^20*d - 12*a^2*b*c^20*d))/
(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d
^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) + (
4*tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1/2)*(2*a^3*d^7 + b^3*c^7 + 6*a
^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^4*d^3 + 4*b^3*c^5*d^2 - 3*
a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d)*(8*c^21*d - 8*c^8*d^14 +
8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 1
60*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48
*c^19*d^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*
c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)*(c^16*d + c^17 - c^6*d^1
1 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*
d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*
(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^
4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d)
)/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^
6 + 21*c^14*d^4 - 7*c^16*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^3*d^7 + b^
3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^4*d^3 + 4*b^3*c
^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d)*1i)/(2*(c^18 -
 c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*
d^4 - 7*c^16*d^2)))/((16*(4*a^9*d^13 - 12*a^8*b*c^13 - 2*a^9*c*d^12 + 16*a^
9*c^12*d + a^3*b^6*c^13 + 12*a^5*b^4*c^13 - 2*a^6*b^3*c^13 + 36*a^7*b^2*c^1
3 - 26*a^9*c^2*d^11 + 11*a^9*c^3*d^10 + 70*a^9*c^4*d^9 - 34*a^9*c^5*d^8 - 1
10*a^9*c^6*d^7 + 66*a^9*c^7*d^6 + 110*a^9*c^8*d^5 - 64*a^9*c^9*d^4 - 64*a^9
*c^10*d^3 + 48*a^9*c^11*d^2 - 24*a^4*b^5*c^12*d - 158*a^6*b^3*c^12*d + 24*a
^7*b^2*c^12*d + 18*a^8*b*c^4*d^9 + 18*a^8*b*c^5*d^8 - 60*a^8*b*c^6*d^7 - 42
*a^8*b*c^7*d^6 + 42*a^8*b*c^8*d^5 + 18*a^8*b*c^9*d^4 - 66*a^8*b*c^10*d^3 +
18*a^8*b*c^11*d^2 + 16*a^3*b^6*c^9*d^4 + 8*a^3*b^6*c^11*d^2 - 24*a^4*b^5*c^
8*d^5 - 102*a^4*b^5*c^10*d^3 + 9*a^5*b^4*c^7*d^6 + 144*a^5*b^4*c^9*d^4 + 21
0*a^5*b^4*c^11*d^2 + 8*a^6*b^3*c^4*d^9 + 8*a^6*b^3*c^5*d^8 - 30*a^6*b^3*c^6
*d^7 - 22*a^6*b^3*c^7*d^6 - 22*a^6*b^3*c^8*d^5 + 18*a^6*b^3*c^9*d^4 - 298*a
^6*b^3*c^10*d^3 - 2*a^6*b^3*c^11*d^2 - 6*a^7*b^2*c^3*d^10 - 6*a^7*b^2*c^4*d
^9 - 6*a^7*b^2*c^6*d^7 + 66*a^7*b^2*c^7*d^6 + 54*a^7*b^2*c^8*d^5 + 3*a^7*b^
2*c^9*d^4 - 66*a^7*b^2*c^10*d^3 + 276*a^7*b^2*c^11*d^2 - 84*a^8*b*c^12*d))/
(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d
^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) - (
((8*tan(e/2 + (f*x)/2)*(4*a^6*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a^6*c*d^13 -
 8*a^6*c^13*d + 12*a^2*b^4*c^14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d^12 + 48*a^
6*c^3*d^11 + 117*a^6*c^4*d^10 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^8 + 160*a^6
*c^7*d^7 + 156*a^6*c^8*d^6 - 120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 + 48*a^6*c^1
1*d^3 + 44*a^6*c^12*d^2 + 16*b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*a*b^5*c^9*d
```

^5 - 102*a*b^5*c^11*d^3 - 160*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9 - 102*a^5*b
*c^7*d^7 + 60*a^5*b*c^9*d^5 - 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*d^6 + 144*a
^2*b^4*c^10*d^4 + 210*a^2*b^4*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52*a^3*b^3*c^
7*d^7 - 4*a^3*b^3*c^9*d^5 - 300*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^4*d^10 - 6*
a^4*b^2*c^6*d^8 + 120*a^4*b^2*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 300*a^4*b^2*c
^12*d^2 - 24*a*b^5*c^13*d - 96*a^5*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c
^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 +
 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2) + (((8*(4*a^3*c^21 + 2*b^3*c^21 + 1
2*a^2*b*c^21 - 16*a^3*c^20*d - 2*b^3*c^20*d - 4*a^3*c^8*d^13 + 2*a^3*c^9*d^
12 + 26*a^3*c^10*d^11 - 14*a^3*c^11*d^10 - 70*a^3*c^12*d^9 + 30*a^3*c^13*d^
8 + 110*a^3*c^14*d^7 - 30*a^3*c^15*d^6 - 110*a^3*c^16*d^5 + 20*a^3*c^17*d^4
 + 64*a^3*c^18*d^3 - 12*a^3*c^19*d^2 + 8*b^3*c^12*d^9 - 8*b^3*c^13*d^8 - 22
*b^3*c^14*d^7 + 22*b^3*c^15*d^6 + 18*b^3*c^16*d^5 - 18*b^3*c^17*d^4 - 2*b^3
*c^18*d^3 + 2*b^3*c^19*d^2 - 6*a*b^2*c^11*d^10 + 6*a*b^2*c^12*d^9 - 6*a*b^2
*c^13*d^8 + 6*a*b^2*c^14*d^7 + 54*a*b^2*c^15*d^6 - 54*a*b^2*c^16*d^5 - 66*a
*b^2*c^17*d^4 + 66*a*b^2*c^18*d^3 + 24*a*b^2*c^19*d^2 + 18*a^2*b*c^12*d^9 -
 18*a^2*b*c^13*d^8 - 42*a^2*b*c^14*d^7 + 42*a^2*b*c^15*d^6 + 18*a^2*b*c^16*
d^5 - 18*a^2*b*c^17*d^4 + 18*a^2*b*c^18*d^3 - 18*a^2*b*c^19*d^2 - 24*a*b^2*
c^20*d - 12*a^2*b*c^20*d))/(c^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d
^9 + 5*c^12*d^8 - 10*c^13*d^7 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5
*c^17*d^3 - 5*c^18*d^2) - (4*tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1/2)
*(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c
^4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d
)*(8*c^21*d - 8*c^8*d^14 + 8*c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c
^12*d^10 + 120*c^13*d^9 + 160*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*
c^17*d^5 + 48*c^18*d^4 - 48*c^19*d^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c
^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^
2)*(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d
^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*(
(c + d)^7*(c - d)^7)^(1/2)*(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d
 - 7*a^3*c^2*d^5 + 8*a^3*c^4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*
b*c^5*d^2 - 12*a*b^2*c^6*d))/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10
 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)))*((c + d)^7*(c -
d)^7)^(1/2)*(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^
5 + 8*a^3*c^4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*
a*b^2*c^6*d))/(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8
 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)) + (((8*tan(e/2 + (f*x)/2)*(4*a^6
*c^14 + 8*a^6*d^14 + b^6*c^14 - 8*a^6*c*d^13 - 8*a^6*c^13*d + 12*a^2*b^4*c^
14 + 36*a^4*b^2*c^14 - 48*a^6*c^2*d^12 + 48*a^6*c^3*d^11 + 117*a^6*c^4*d^10
 - 120*a^6*c^5*d^9 - 164*a^6*c^6*d^8 + 160*a^6*c^7*d^7 + 156*a^6*c^8*d^6 -
120*a^6*c^9*d^5 - 92*a^6*c^10*d^4 + 48*a^6*c^11*d^3 + 44*a^6*c^12*d^2 + 16*
b^6*c^10*d^4 + 8*b^6*c^12*d^2 - 24*a*b^5*c^9*d^5 - 102*a*b^5*c^11*d^3 - 160
*a^3*b^3*c^13*d + 36*a^5*b*c^5*d^9 - 102*a^5*b*c^7*d^7 + 60*a^5*b*c^9*d^5 -
 48*a^5*b*c^11*d^3 + 9*a^2*b^4*c^8*d^6 + 144*a^2*b^4*c^10*d^4 + 210*a^2*b^4
*c^12*d^2 + 16*a^3*b^3*c^5*d^9 - 52*a^3*b^3*c^7*d^7 - 4*a^3*b^3*c^9*d^5 - 3
00*a^3*b^3*c^11*d^3 - 12*a^4*b^2*c^4*d^10 - 6*a^4*b^2*c^6*d^8 + 120*a^4*b^2
*c^8*d^6 - 63*a^4*b^2*c^10*d^4 + 300*a^4*b^2*c^12*d^2 - 24*a*b^5*c^13*d - 9
6*a^5*b*c^13*d))/(c^16*d + c^17 - c^6*d^11 - c^7*d^10 + 5*c^8*d^9 + 5*c^9*d
^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^5 + 10*c^13*d^4 - 5*c^14*d^3 - 5
*c^15*d^2) - (((8*(4*a^3*c^21 + 2*b^3*c^21 + 12*a^2*b*c^21 - 16*a^3*c^20*d
 - 2*b^3*c^20*d - 4*a^3*c^8*d^13 + 2*a^3*c^9*d^12 + 26*a^3*c^10*d^11 - 14*a^
3*c^11*d^10 - 70*a^3*c^12*d^9 + 30*a^3*c^13*d^8 + 110*a^3*c^14*d^7 - 30*a^3
*c^15*d^6 - 110*a^3*c^16*d^5 + 20*a^3*c^17*d^4 + 64*a^3*c^18*d^3 - 12*a^3*c
^19*d^2 + 8*b^3*c^12*d^9 - 8*b^3*c^13*d^8 - 22*b^3*c^14*d^7 + 22*b^3*c^15*d
^6 + 18*b^3*c^16*d^5 - 18*b^3*c^17*d^4 - 2*b^3*c^18*d^3 + 2*b^3*c^19*d^2 -
6*a*b^2*c^11*d^10 + 6*a*b^2*c^12*d^9 - 6*a*b^2*c^13*d^8 + 6*a*b^2*c^14*d^7
+ 54*a*b^2*c^15*d^6 - 54*a*b^2*c^16*d^5 - 66*a*b^2*c^17*d^4 + 66*a*b^2*c^18
*d^3 + 24*a*b^2*c^19*d^2 + 18*a^2*b*c^12*d^9 - 18*a^2*b*c^13*d^8 - 42*a^2*b
*c^14*d^7 + 42*a^2*b*c^15*d^6 + 18*a^2*b*c^16*d^5 - 18*a^2*b*c^17*d^4 + 18*

```
a^2*b*c^18*d^3 - 18*a^2*b*c^19*d^2 - 24*a*b^2*c^20*d - 12*a^2*b*c^20*d))/(c
^19*d + c^20 - c^9*d^11 - c^10*d^10 + 5*c^11*d^9 + 5*c^12*d^8 - 10*c^13*d^7
 - 10*c^14*d^6 + 10*c^15*d^5 + 10*c^16*d^4 - 5*c^17*d^3 - 5*c^18*d^2) + (4*
tan(e/2 + (f*x)/2)*((c + d)^7*(c - d)^7)^(1/2)*(2*a^3*d^7 + b^3*c^7 + 6*a^2
*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^4*d^3 + 4*b^3*c^5*d^2 - 3*a*
b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d)*(8*c^21*d - 8*c^8*d^14 + 8*
c^9*d^13 + 48*c^10*d^12 - 48*c^11*d^11 - 120*c^12*d^10 + 120*c^13*d^9 + 160
*c^14*d^8 - 160*c^15*d^7 - 120*c^16*d^6 + 120*c^17*d^5 + 48*c^18*d^4 - 48*c
^19*d^3 - 8*c^20*d^2))/((c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^
10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2)*(c^16*d + c^17 - c^6*d^11
- c^7*d^10 + 5*c^8*d^9 + 5*c^9*d^8 - 10*c^10*d^7 - 10*c^11*d^6 + 10*c^12*d^
5 + 10*c^13*d^4 - 5*c^14*d^3 - 5*c^15*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2
*a^3*d^7 + b^3*c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^4*
d^3 + 4*b^3*c^5*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d))/
(2*(c^18 - c^4*d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6
+ 21*c^14*d^4 - 7*c^16*d^2)))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^3*d^7 + b^3*
c^7 + 6*a^2*b*c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^4*d^3 + 4*b^3*c^5
*d^2 - 3*a*b^2*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d))/(2*(c^18 - c^4*
d^14 + 7*c^6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 -
 7*c^16*d^2))))*((c + d)^7*(c - d)^7)^(1/2)*(2*a^3*d^7 + b^3*c^7 + 6*a^2*b*
c^7 - 8*a^3*c^6*d - 7*a^3*c^2*d^5 + 8*a^3*c^4*d^3 + 4*b^3*c^5*d^2 - 3*a*b^2
*c^4*d^3 + 9*a^2*b*c^5*d^2 - 12*a*b^2*c^6*d)*1i)/(f*(c^18 - c^4*d^14 + 7*c^
6*d^12 - 21*c^8*d^10 + 35*c^10*d^8 - 35*c^12*d^6 + 21*c^14*d^4 - 7*c^16*d^2
))
```

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

$$\int \frac{\left(a + b\sec\left(e + fx\right)\right)^3}{\left(c + d\sec\left(e + fx\right)\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**3/(c+d*sec(f*x+e))**4,x)
```

```
[Out] Integral((a + b*sec(e + f*x))**3/(c + d*sec(e + f*x))**4, x)
```

3.197 $\int \frac{(a+b\sec(e+fx))^3}{(c+d\sec(e+fx))^5}\,dx$

Optimal. Leaf size=622

$$\frac{a^3x}{c^5}-\frac{(bc-ad)\left(-a^2d^2\left(58c^4-35c^2d^2+12d^4\right)+2abcd\left(32c^4+c^2d^2+2d^4\right)-\left(b^2\left(12c^6+25c^4d^2-2c^2d^4\right)\right)\right)\sin}{24c^4f\left(c^2-d^2\right)^3(c\cos(e+fx)+d)^2}$$

```
[Out] a^3*x/c^5+1/4*d^2*(b+a*cos(f*x+e))^3*sin(f*x+e)/c/(c^2-d^2)/f/(d+c*cos(f*x+
e))^4-1/12*d*(-11*a*c^2*d+4*a*d^3+8*b*c^3-b*c*d^2)*(b+a*cos(f*x+e))^2*sin(f
*x+e)/c^2/(c^2-d^2)^2/f/(d+c*cos(f*x+e))^3-1/24*(-a*d+b*c)*(2*a*b*c*d*(32*c
^4+c^2*d^2+2*d^4)-a^2*d^2*(58*c^4-35*c^2*d^2+12*d^4)-b^2*(12*c^6+25*c^4*d^2
-2*c^2*d^4))*sin(f*x+e)/c^4/(c^2-d^2)^3/f/(d+c*cos(f*x+e))^2-1/24*(b^3*c^3*
d*(68*c^4+39*c^2*d^2-2*d^4)+a^2*b*c*d*(272*c^6+10*c^4*d^2+49*c^2*d^4-16*d^6
)-3*a*b^2*c^2*(24*c^6+84*c^4*d^2-5*c^2*d^4+2*d^6)-a^3*(212*c^6*d^2-210*c^4*
d^4+139*c^2*d^6-36*d^8))*sin(f*x+e)/c^4/(c^2-d^2)^4/f/(d+c*cos(f*x+e))-1/4*
(15*a*b^2*c^6*d*(4*c^2+3*d^2)-3*a^2*b*c^5*(8*c^4+24*c^2*d^2+3*d^4)-b^3*c^5*
(4*c^4+27*c^2*d^2+4*d^4)+a^3*(40*c^8*d-40*c^6*d^3+63*c^4*d^5-36*c^2*d^7+8*d
^9))*arctanh((c-d)^(1/2)*tan(1/2*e+1/2*f*x)/(c+d)^(1/2))/c^5/(c^2-d^2)^4/f/
(c-d)^(1/2)/(c+d)^(1/2)
```

Rubi [A] time = 1.77, antiderivative size = 622, 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 = {3941, 3048, 3047, 3031, 3021, 2735, 2659, 208}

$$-\frac{\left(a^2bcd\left(10c^4d^2+49c^2d^4+272c^6-16d^6\right)+a^3\left(-\left(139c^2d^6-210c^4d^4+212c^6d^2-36d^8\right)\right)-3ab^2c^2\left(84c^4d^2-\right.\right.}{24c^4f\left(c^2-d^2\right)^4(c\cos(e+fx)+d)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^3/(c + d*Sec[e + f*x])^5,x]
```

```
[Out] (a^3*x)/c^5 - ((15*a*b^2*c^6*d*(4*c^2 + 3*d^2) - 3*a^2*b*c^5*(8*c^4 + 24*c^
2*d^2 + 3*d^4) - b^3*c^5*(4*c^4 + 27*c^2*d^2 + 4*d^4) + a^3*(40*c^8*d - 40*
c^6*d^3 + 63*c^4*d^5 - 36*c^2*d^7 + 8*d^9))*ArcTanh[(Sqrt[c - d]*Tan[(e + f
*x)/2])/Sqrt[c + d]])/(4*c^5*Sqrt[c - d]*Sqrt[c + d]*(c^2 - d^2)^4*f) + (d^
2*(b + a*Cos[e + f*x])^3*Sin[e + f*x])/(4*c*(c^2 - d^2)*f*(d + c*Cos[e + f*
x])^4) - (d*(8*b*c^3 - 11*a*c^2*d - b*c*d^2 + 4*a*d^3)*(b + a*Cos[e + f*x])
^2*Sin[e + f*x])/(12*c^2*(c^2 - d^2)^2*f*(d + c*Cos[e + f*x])^3) - ((b*c -
a*d)*(2*a*b*c*d*(32*c^4 + c^2*d^2 + 2*d^4) - a^2*d^2*(58*c^4 - 35*c^2*d^2 +
 12*d^4) - b^2*(12*c^6 + 25*c^4*d^2 - 2*c^2*d^4))*Sin[e + f*x])/(24*c^4*(c^
2 - d^2)^3*f*(d + c*Cos[e + f*x])^2) - ((b^3*c^3*d*(68*c^4 + 39*c^2*d^2 - 2
*d^4) + a^2*b*c*d*(272*c^6 + 10*c^4*d^2 + 49*c^2*d^4 - 16*d^6) - 3*a*b^2*c^
2*(24*c^6 + 84*c^4*d^2 - 5*c^2*d^4 + 2*d^6) - a^3*(212*c^6*d^2 - 210*c^4*d^
4 + 139*c^2*d^6 - 36*d^8))*Sin[e + f*x])/(24*c^4*(c^2 - d^2)^4*f*(d + c*Cos
[e + f*x]))
```

Rule 208

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

Rule 2659

```
Int[((a_) + (b_.)*sin[Pi/2 + (c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{
e = FreeFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + b + (
```

```
a - b)*e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x]
&& NeQ[a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 3021

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((A*b^2
 - a*b*B + a^2*C)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 1)*(
a^2 - b^2)), x] + Dist[1/(b*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*Simp[b*(a*A - b*B + a*C)*(m + 1) - (A*b^2 - a*b*B + a^2*C + b*(A*b
- a*B + b*C)*(m + 1))*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B,
C}, x] && LtQ[m, -1] && NeQ[a^2 - b^2, 0]
```

Rule 3031

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f
_.)*(x_)]^2), x_Symbol] :> -Simp[((b*c - a*d)*(A*b^2 - a*b*B + a^2*C)*Cos[e
 + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b^2*f*(m + 1)*(a^2 - b^2)), x] - Dis
t[1/(b^2*(m + 1)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^(m + 1)*Simp[b*(m +
 1)*((b*B - a*C)*(b*c - a*d) - A*b*(a*c - b*d)) + (b*B*(a^2*d + b^2*d*(m +
1) - a*b*c*(m + 2)) + (b*c - a*d)*(A*b^2*(m + 2) + C*(a^2 + b^2*(m + 1))))*
Sin[e + f*x] - b*C*d*(m + 1)*(a^2 - b^2)*Sin[e + f*x]^2, x], x], x] /; Free
Q[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
 && LtQ[m, -1]
```

Rule 3047

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((c^2*C - B*c*d + A*d^2)*Cos[e + f*x]
*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d
^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)), Int[(a + b*Sin[e + f*x])^(m - 1)
*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(b*d*m + a*c*(n + 1)) + (c*C - B*d)*
(b*c*m + a*d*(n + 1)) - (d*(A*(a*d*(n + 2) - b*c*(n + 1)) + B*(b*d*(n + 1)
- a*c*(n + 2))) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] +
 b*(d*(B*c - A*d)*(m + n + 2) - C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]
^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0
] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3048

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
-Simp[((c^2*C + A*d^2)*Cos[e + f*x]*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f
*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)
), Int[(a + b*Sin[e + f*x])^(m - 1)*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(
b*d*m + a*c*(n + 1)) + c*C*(b*c*m + a*d*(n + 1)) - (A*d*(a*d*(n + 2) - b*c*
(n + 1)) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] - b*(A*d
^2*(m + n + 2) + C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x]
/; FreeQ[{a, b, c, d, e, f, A, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2
, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3941

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Int[((b + a*Sin[e + f*x])^m*(d + c*Sin[e + f
*x])^n)/Sin[e + f*x]^(m + n), x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && N
eQ[b*c - a*d, 0] && IntegerQ[m] && IntegerQ[n] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^3}{(c+d\sec(e+fx))^5}\,dx = \int \frac{\cos^2(e+fx)(b+a\cos(e+fx))^3}{(d+c\cos(e+fx))^5}\,dx$$

$$= \frac{d^2(b+a\cos(e+fx))^3\sin(e+fx)}{4c\left(c^2-d^2\right)f(d+c\cos(e+fx))^4} + \frac{\int \frac{(b+a\cos(e+fx))^2\left(-d(4bc-3ad)+\left(4bc^2-4acd-bd^2\right)\cos(}{(d+c\cos(e+fx))^4}}{4c\left(c^2-d^2\right)}$$

$$= \frac{d^2(b+a\cos(e+fx))^3\sin(e+fx)}{4c\left(c^2-d^2\right)f(d+c\cos(e+fx))^4} - \frac{d\left(8bc^3-11ac^2d-bcd^2+4ad^3\right)(b+a\cos(}{12c^2\left(c^2-d^2\right)^2 f(d+c\cos(e+}$$

$$= \frac{d^2(b+a\cos(e+fx))^3\sin(e+fx)}{4c\left(c^2-d^2\right)f(d+c\cos(e+fx))^4} - \frac{d\left(8bc^3-11ac^2d-bcd^2+4ad^3\right)(b+a\cos(}{12c^2\left(c^2-d^2\right)^2 f(d+c\cos(e+}$$

$$= \frac{d^2(b+a\cos(e+fx))^3\sin(e+fx)}{4c\left(c^2-d^2\right)f(d+c\cos(e+fx))^4} - \frac{d\left(8bc^3-11ac^2d-bcd^2+4ad^3\right)(b+a\cos(}{12c^2\left(c^2-d^2\right)^2 f(d+c\cos(e+}$$

$$= \frac{a^3x}{c^5} + \frac{d^2(b+a\cos(e+fx))^3\sin(e+fx)}{4c\left(c^2-d^2\right)f(d+c\cos(e+fx))^4} - \frac{d\left(8bc^3-11ac^2d-bcd^2+4ad^3\right)(b+}{12c^2\left(c^2-d^2\right)^2 f(d+c}$$

$$= \frac{a^3x}{c^5} + \frac{d^2(b+a\cos(e+fx))^3\sin(e+fx)}{4c\left(c^2-d^2\right)f(d+c\cos(e+fx))^4} - \frac{d\left(8bc^3-11ac^2d-bcd^2+4ad^3\right)(b+}{12c^2\left(c^2-d^2\right)^2 f(d+c}$$

$$= \frac{a^3x}{c^5} - \frac{\left(15ab^2c^6d\left(4c^2+3d^2\right)-3a^2bc^5\left(8c^4+24c^2d^2+3d^4\right)-b^3c^5\left(4c^4+27c^2d^2\right.}{4c^5\sqrt{c-d}}$$

Mathematica [B] time = 6.93, size = 1285, normalized size = 2.07

$$\frac{a^3(e+fx)\sec^2(e+fx)(a+b\sec(e+fx))^3(d+c\cos(e+fx))^5}{c^5f(b+a\cos(e+fx))^3(c+d\sec(e+fx))^5} + \frac{\left(-4b^3c^9-24a^2bc^9+40a^3dc^8+60ab^2dc^8-2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])^3/(c + d*Sec[e + f*x])^5,x]
```

```
[Out] (a^3*(e + f*x)*(d + c*Cos[e + f*x])^5*Sec[e + f*x]^2*(a + b*Sec[e + f*x])^3
)/(c^5*f*(b + a*Cos[e + f*x])^3*(c + d*Sec[e + f*x])^5) + ((-24*a^2*b*c^9 -
 4*b^3*c^9 + 40*a^3*c^8*d + 60*a*b^2*c^8*d - 72*a^2*b*c^7*d^2 - 27*b^3*c^7*
d^2 - 40*a^3*c^6*d^3 + 45*a*b^2*c^6*d^3 - 9*a^2*b*c^5*d^4 - 4*b^3*c^5*d^4 +
 63*a^3*c^4*d^5 - 36*a^3*c^2*d^7 + 8*a^3*d^9)*ArcTanh[((-c + d)*Tan[(e + f*
x)/2])/Sqrt[c^2 - d^2]]*(d + c*Cos[e + f*x])^5*Sec[e + f*x]^2*(a + b*Sec[e
+ f*x])^3)/(4*c^5*Sqrt[c^2 - d^2]*(-c^2 + d^2)^4*f*(b + a*Cos[e + f*x])^3*(
```

```
c + d*Sec[e + f*x])^5) + ((d + c*Cos[e + f*x])*Sec[e + f*x]^2*(a + b*Sec[e
+ f*x])^3*(b^3*c^3*d^2*Sin[e + f*x] - 3*a*b^2*c^2*d^3*Sin[e + f*x] + 3*a^2*
b*c*d^4*Sin[e + f*x] - a^3*d^5*Sin[e + f*x]))/(4*c^4*(c^2 - d^2)*f*(b + a*C
os[e + f*x])^3*(c + d*Sec[e + f*x])^5) + ((d + c*Cos[e + f*x])^2*Sec[e + f*
x]^2*(a + b*Sec[e + f*x])^3*(-8*b^3*c^5*d*Sin[e + f*x] + 36*a*b^2*c^4*d^2*S
in[e + f*x] - 48*a^2*b*c^3*d^3*Sin[e + f*x] + b^3*c^3*d^3*Sin[e + f*x] + 20
*a^3*c^2*d^4*Sin[e + f*x] - 15*a*b^2*c^2*d^4*Sin[e + f*x] + 27*a^2*b*c*d^5*
Sin[e + f*x] - 13*a^3*d^6*Sin[e + f*x]))/(12*c^4*(c^2 - d^2)^2*f*(b + a*Cos
[e + f*x])^3*(c + d*Sec[e + f*x])^5) + ((d + c*Cos[e + f*x])^3*Sec[e + f*x]
^2*(a + b*Sec[e + f*x])^3*(12*b^3*c^7*Sin[e + f*x] - 108*a*b^2*c^6*d*Sin[e
+ f*x] + 216*a^2*b*c^5*d^2*Sin[e + f*x] + 25*b^3*c^5*d^2*Sin[e + f*x] - 120
*a^3*c^4*d^3*Sin[e + f*x] + 9*a*b^2*c^4*d^3*Sin[e + f*x] - 165*a^2*b*c^3*d^
4*Sin[e + f*x] - 2*b^3*c^3*d^4*Sin[e + f*x] + 131*a^3*c^2*d^5*Sin[e + f*x]
- 6*a*b^2*c^2*d^5*Sin[e + f*x] + 54*a^2*b*c*d^6*Sin[e + f*x] - 46*a^3*d^7*S
in[e + f*x]))/(24*c^4*(c^2 - d^2)^3*f*(b + a*Cos[e + f*x])^3*(c + d*Sec[e +
 f*x])^5) + ((d + c*Cos[e + f*x])^4*Sec[e + f*x]^2*(a + b*Sec[e + f*x])^3*(
72*a*b^2*c^8*Sin[e + f*x] - 288*a^2*b*c^7*d*Sin[e + f*x] - 68*b^3*c^7*d*Sin
[e + f*x] + 240*a^3*c^6*d^2*Sin[e + f*x] + 252*a*b^2*c^6*d^2*Sin[e + f*x] +
 24*a^2*b*c^5*d^3*Sin[e + f*x] - 39*b^3*c^5*d^3*Sin[e + f*x] - 280*a^3*c^4*
d^4*Sin[e + f*x] - 15*a*b^2*c^4*d^4*Sin[e + f*x] - 69*a^2*b*c^3*d^5*Sin[e +
 f*x] + 2*b^3*c^3*d^5*Sin[e + f*x] + 195*a^3*c^2*d^6*Sin[e + f*x] + 6*a*b^2
*c^2*d^6*Sin[e + f*x] + 18*a^2*b*c*d^7*Sin[e + f*x] - 50*a^3*d^8*Sin[e + f*
x]))/(24*c^4*(c^2 - d^2)^4*f*(b + a*Cos[e + f*x])^3*(c + d*Sec[e + f*x])^5)
```

fricas [B] time = 1.13, size = 4346, normalized size = 6.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^5,x, algorithm="fricas")
```

```
[Out] [1/48*(48*(a^3*c^14 - 5*a^3*c^12*d^2 + 10*a^3*c^10*d^4 - 10*a^3*c^8*d^6 + 5
*a^3*c^6*d^8 - a^3*c^4*d^10)*f*x*cos(f*x + e)^4 + 192*(a^3*c^13*d - 5*a^3*c
^11*d^3 + 10*a^3*c^9*d^5 - 10*a^3*c^7*d^7 + 5*a^3*c^5*d^9 - a^3*c^3*d^11)*f
*x*cos(f*x + e)^3 + 288*(a^3*c^12*d^2 - 5*a^3*c^10*d^4 + 10*a^3*c^8*d^6 - 1
0*a^3*c^6*d^8 + 5*a^3*c^4*d^10 - a^3*c^2*d^12)*f*x*cos(f*x + e)^2 + 192*(a^
3*c^11*d^3 - 5*a^3*c^9*d^5 + 10*a^3*c^7*d^7 - 10*a^3*c^5*d^9 + 5*a^3*c^3*d^
11 - a^3*c*d^13)*f*x*cos(f*x + e) + 48*(a^3*c^10*d^4 - 5*a^3*c^8*d^6 + 10*a
^3*c^6*d^8 - 10*a^3*c^4*d^10 + 5*a^3*c^2*d^12 - a^3*d^14)*f*x + 3*(63*a^3*c
^4*d^9 - 36*a^3*c^2*d^11 + 8*a^3*d^13 - 4*(6*a^2*b + b^3)*c^9*d^4 + 20*(2*a
^3 + 3*a*b^2)*c^8*d^5 - 9*(8*a^2*b + 3*b^3)*c^7*d^6 - 5*(8*a^3 - 9*a*b^2)*c
^6*d^7 - (9*a^2*b + 4*b^3)*c^5*d^8 + (63*a^3*c^8*d^5 - 36*a^3*c^6*d^7 + 8*a
^3*c^4*d^9 - 4*(6*a^2*b + b^3)*c^13 + 20*(2*a^3 + 3*a*b^2)*c^12*d - 9*(8*a^
2*b + 3*b^3)*c^11*d^2 - 5*(8*a^3 - 9*a*b^2)*c^10*d^3 - (9*a^2*b + 4*b^3)*c^
9*d^4)*cos(f*x + e)^4 + 4*(63*a^3*c^7*d^6 - 36*a^3*c^5*d^8 + 8*a^3*c^3*d^10
 - 4*(6*a^2*b + b^3)*c^12*d + 20*(2*a^3 + 3*a*b^2)*c^11*d^2 - 9*(8*a^2*b +
3*b^3)*c^10*d^3 - 5*(8*a^3 - 9*a*b^2)*c^9*d^4 - (9*a^2*b + 4*b^3)*c^8*d^5)*
cos(f*x + e)^3 + 6*(63*a^3*c^6*d^7 - 36*a^3*c^4*d^9 + 8*a^3*c^2*d^11 - 4*(6
*a^2*b + b^3)*c^11*d^2 + 20*(2*a^3 + 3*a*b^2)*c^10*d^3 - 9*(8*a^2*b + 3*b^3
)*c^9*d^4 - 5*(8*a^3 - 9*a*b^2)*c^8*d^5 - (9*a^2*b + 4*b^3)*c^7*d^6)*cos(f*
x + e)^2 + 4*(63*a^3*c^5*d^8 - 36*a^3*c^3*d^10 + 8*a^3*c*d^12 - 4*(6*a^2*b
+ b^3)*c^10*d^3 + 20*(2*a^3 + 3*a*b^2)*c^9*d^4 - 9*(8*a^2*b + 3*b^3)*c^8*d^
5 - 5*(8*a^3 - 9*a*b^2)*c^7*d^6 - (9*a^2*b + 4*b^3)*c^6*d^7)*cos(f*x + e))*
sqrt(c^2 - d^2)*log((2*c*d*cos(f*x + e) - (c^2 - 2*d^2)*cos(f*x + e)^2 - 2*
sqrt(c^2 - d^2)*(d*cos(f*x + e) + c)*sin(f*x + e) + 2*c^2 - d^2)/(c^2*cos(f
*x + e)^2 + 2*c*d*cos(f*x + e) + d^2)) + 2*(2*b^3*c^12*d^2 + 18*a*b^2*c^11*
d^3 - 116*a^3*c^3*d^11 + 24*a^3*c*d^13 - (150*a^2*b + 41*b^3)*c^10*d^4 + 77
*(2*a^3 + 3*a*b^2)*c^9*d^5 - (15*a^2*b + 29*b^3)*c^8*d^6 - (271*a^3 + 201*a
*b^2)*c^7*d^7 + (165*a^2*b + 68*b^3)*c^6*d^8 + (209*a^3 - 48*a*b^2)*c^5*d^9
 + (72*a*b^2*c^14 - 18*a^2*b*c^5*d^9 + 50*a^3*c^4*d^10 - 4*(72*a^2*b + 17*b
```

^3)*c^13*d + 60*(4*a^3 + 3*a*b^2)*c^12*d^2 + (312*a^2*b + 29*b^3)*c^11*d^3 - (520*a^3 + 267*a*b^2)*c^10*d^4 - (93*a^2*b - 41*b^3)*c^9*d^5 + (475*a^3 + 21*a*b^2)*c^8*d^6 + (87*a^2*b - 2*b^3)*c^7*d^7 - (245*a^3 + 6*a*b^2)*c^6*d ^8)*cos(f*x + e)^3 + (12*b^3*c^14 + 108*a*b^2*c^13*d + 104*a^3*c^3*d^11 - (648*a^2*b + 203*b^3)*c^12*d^2 + 15*(40*a^3 + 51*a*b^2)*c^11*d^3 + (339*a^2* b + 47*b^3)*c^10*d^4 - (1189*a^3 + 933*a*b^2)*c^9*d^5 + (321*a^2*b + 152*b^ 3)*c^8*d^6 + (997*a^3 + 84*a*b^2)*c^7*d^7 - 4*(3*a^2*b + 2*b^3)*c^6*d^8 - 8 *(64*a^3 + 3*a*b^2)*c^5*d^9)*cos(f*x + e)^2 + (8*b^3*c^13*d + 72*a*b^2*c^12 *d^2 - 407*a^3*c^4*d^10 + 84*a^3*c^2*d^12 - 8*(66*a^2*b + 19*b^3)*c^11*d^3 + 8*(65*a^3 + 93*a*b^2)*c^10*d^4 + (84*a^2*b - 47*b^3)*c^9*d^5 - (964*a^3 + 759*a*b^2)*c^8*d^6 + (471*a^2*b + 203*b^3)*c^7*d^7 + (767*a^3 - 57*a*b^2)* c^6*d^8 - 3*(9*a^2*b + 4*b^3)*c^5*d^9)*cos(f*x + e))*sin(f*x + e))/((c^19 - 5*c^17*d^2 + 10*c^15*d^4 - 10*c^13*d^6 + 5*c^11*d^8 - c^9*d^10)*f*cos(f*x + e)^4 + 4*(c^18*d - 5*c^16*d^3 + 10*c^14*d^5 - 10*c^12*d^7 + 5*c^10*d^9 - c^8*d^11)*f*cos(f*x + e)^3 + 6*(c^17*d^2 - 5*c^15*d^4 + 10*c^13*d^6 - 10*c^ 11*d^8 + 5*c^9*d^10 - c^7*d^12)*f*cos(f*x + e)^2 + 4*(c^16*d^3 - 5*c^14*d^5 + 10*c^12*d^7 - 10*c^10*d^9 + 5*c^8*d^11 - c^6*d^13)*f*cos(f*x + e) + (c^1 5*d^4 - 5*c^13*d^6 + 10*c^11*d^8 - 10*c^9*d^10 + 5*c^7*d^12 - c^5*d^14)*f), 1/24*(24*(a^3*c^14 - 5*a^3*c^12*d^2 + 10*a^3*c^10*d^4 - 10*a^3*c^8*d^6 + 5 *a^3*c^6*d^8 - a^3*c^4*d^10)*f*x*cos(f*x + e)^4 + 96*(a^3*c^13*d - 5*a^3*c^ 11*d^3 + 10*a^3*c^9*d^5 - 10*a^3*c^7*d^7 + 5*a^3*c^5*d^9 - a^3*c^3*d^11)*f* x*cos(f*x + e)^3 + 144*(a^3*c^12*d^2 - 5*a^3*c^10*d^4 + 10*a^3*c^8*d^6 - 10 *a^3*c^6*d^8 + 5*a^3*c^4*d^10 - a^3*c^2*d^12)*f*x*cos(f*x + e)^2 + 96*(a^3* c^11*d^3 - 5*a^3*c^9*d^5 + 10*a^3*c^7*d^7 - 10*a^3*c^5*d^9 + 5*a^3*c^3*d^11 - a^3*c*d^13)*f*x*cos(f*x + e) + 24*(a^3*c^10*d^4 - 5*a^3*c^8*d^6 + 10*a^3 *c^6*d^8 - 10*a^3*c^4*d^10 + 5*a^3*c^2*d^12 - a^3*d^14)*f*x - 3*(63*a^3*c^4 *d^9 - 36*a^3*c^2*d^11 + 8*a^3*d^13 - 4*(6*a^2*b + b^3)*c^9*d^4 + 20*(2*a^3 + 3*a*b^2)*c^8*d^5 - 9*(8*a^2*b + 3*b^3)*c^7*d^6 - 5*(8*a^3 - 9*a*b^2)*c^6 *d^7 - (9*a^2*b + 4*b^3)*c^5*d^8 + (63*a^3*c^8*d^5 - 36*a^3*c^6*d^7 + 8*a^3 *c^4*d^9 - 4*(6*a^2*b + b^3)*c^13 + 20*(2*a^3 + 3*a*b^2)*c^12*d - 9*(8*a^2* b + 3*b^3)*c^11*d^2 - 5*(8*a^3 - 9*a*b^2)*c^10*d^3 - (9*a^2*b + 4*b^3)*c^9* d^4)*cos(f*x + e)^4 + 4*(63*a^3*c^7*d^6 - 36*a^3*c^5*d^8 + 8*a^3*c^3*d^10 - 4*(6*a^2*b + b^3)*c^12*d + 20*(2*a^3 + 3*a*b^2)*c^11*d^2 - 9*(8*a^2*b + 3* b^3)*c^10*d^3 - 5*(8*a^3 - 9*a*b^2)*c^9*d^4 - (9*a^2*b + 4*b^3)*c^8*d^5)*co s(f*x + e)^3 + 6*(63*a^3*c^6*d^7 - 36*a^3*c^4*d^9 + 8*a^3*c^2*d^11 - 4*(6*a ^2*b + b^3)*c^11*d^2 + 20*(2*a^3 + 3*a*b^2)*c^10*d^3 - 9*(8*a^2*b + 3*b^3)* c^9*d^4 - 5*(8*a^3 - 9*a*b^2)*c^8*d^5 - (9*a^2*b + 4*b^3)*c^7*d^6)*cos(f*x + e)^2 + 4*(63*a^3*c^5*d^8 - 36*a^3*c^3*d^10 + 8*a^3*c*d^12 - 4*(6*a^2*b + b^3)*c^10*d^3 + 20*(2*a^3 + 3*a*b^2)*c^9*d^4 - 9*(8*a^2*b + 3*b^3)*c^8*d^5 - 5*(8*a^3 - 9*a*b^2)*c^7*d^6 - (9*a^2*b + 4*b^3)*c^6*d^7)*cos(f*x + e))*sq rt(-c^2 + d^2)*arctan(-sqrt(-c^2 + d^2)*(d*cos(f*x + e) + c)/((c^2 - d^2)*s in(f*x + e))) + (2*b^3*c^12*d^2 + 18*a*b^2*c^11*d^3 - 116*a^3*c^3*d^11 + 24 *a^3*c*d^13 - (150*a^2*b + 41*b^3)*c^10*d^4 + 77*(2*a^3 + 3*a*b^2)*c^9*d^5 - (15*a^2*b + 29*b^3)*c^8*d^6 - (271*a^3 + 201*a*b^2)*c^7*d^7 + (165*a^2*b + 68*b^3)*c^6*d^8 + (209*a^3 - 48*a*b^2)*c^5*d^9 + (72*a*b^2*c^14 - 18*a^2* b*c^5*d^9 + 50*a^3*c^4*d^10 - 4*(72*a^2*b + 17*b^3)*c^13*d + 60*(4*a^3 + 3* a*b^2)*c^12*d^2 + (312*a^2*b + 29*b^3)*c^11*d^3 - (520*a^3 + 267*a*b^2)*c^1 0*d^4 - (93*a^2*b - 41*b^3)*c^9*d^5 + (475*a^3 + 21*a*b^2)*c^8*d^6 + (87*a^ 2*b - 2*b^3)*c^7*d^7 - (245*a^3 + 6*a*b^2)*c^6*d^8)*cos(f*x + e)^3 + (12*b^ 3*c^14 + 108*a*b^2*c^13*d + 104*a^3*c^3*d^11 - (648*a^2*b + 203*b^3)*c^12*d ^2 + 15*(40*a^3 + 51*a*b^2)*c^11*d^3 + (339*a^2*b + 47*b^3)*c^10*d^4 - (118 9*a^3 + 933*a*b^2)*c^9*d^5 + (321*a^2*b + 152*b^3)*c^8*d^6 + (997*a^3 + 84* a*b^2)*c^7*d^7 - 4*(3*a^2*b + 2*b^3)*c^6*d^8 - 8*(64*a^3 + 3*a*b^2)*c^5*d^9)*cos(f*x + e)^2 + (8*b^3*c^13*d + 72*a*b^2*c^12*d^2 - 407*a^3*c^4*d^10 + 8 4*a^3*c^2*d^12 - 8*(66*a^2*b + 19*b^3)*c^11*d^3 + 8*(65*a^3 + 93*a*b^2)*c^1 0*d^4 + (84*a^2*b - 47*b^3)*c^9*d^5 - (964*a^3 + 759*a*b^2)*c^8*d^6 + (471* a^2*b + 203*b^3)*c^7*d^7 + (767*a^3 - 57*a*b^2)*c^6*d^8 - 3*(9*a^2*b + 4*b^ 3)*c^5*d^9)*cos(f*x + e))*sin(f*x + e))/((c^19 - 5*c^17*d^2 + 10*c^15*d^4 - 10*c^13*d^6 + 5*c^11*d^8 - c^9*d^10)*f*cos(f*x + e)^4 + 4*(c^18*d - 5*c^16

```
*d^3 + 10*c^14*d^5 - 10*c^12*d^7 + 5*c^10*d^9 - c^8*d^11)*f*cos(f*x + e)^3
+ 6*(c^17*d^2 - 5*c^15*d^4 + 10*c^13*d^6 - 10*c^11*d^8 + 5*c^9*d^10 - c^7*d
^12)*f*cos(f*x + e)^2 + 4*(c^16*d^3 - 5*c^14*d^5 + 10*c^12*d^7 - 10*c^10*d^
9 + 5*c^8*d^11 - c^6*d^13)*f*cos(f*x + e) + (c^15*d^4 - 5*c^13*d^6 + 10*c^1
1*d^8 - 10*c^9*d^10 + 5*c^7*d^12 - c^5*d^14)*f)]
```

giac [B] time = 15.07, size = 3311, normalized size = 5.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^5,x, algorithm="giac")
```

```
[Out] 1/12*(3*(24*a^2*b*c^9 + 4*b^3*c^9 - 40*a^3*c^8*d - 60*a*b^2*c^8*d + 72*a^2*
b*c^7*d^2 + 27*b^3*c^7*d^2 + 40*a^3*c^6*d^3 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^
5*d^4 + 4*b^3*c^5*d^4 - 63*a^3*c^4*d^5 + 36*a^3*c^2*d^7 - 8*a^3*d^9)*(pi*fl
oor(1/2*(f*x + e)/pi + 1/2)*sgn(-2*c + 2*d) + arctan(-(c*tan(1/2*f*x + 1/2*
e) - d*tan(1/2*f*x + 1/2*e))/sqrt(-c^2 + d^2)))/((c^13 - 4*c^11*d^2 + 6*c^9
*d^4 - 4*c^7*d^6 + c^5*d^8)*sqrt(-c^2 + d^2)) + 12*(f*x + e)*a^3/c^5 - (72*
a*b^2*c^11*tan(1/2*f*x + 1/2*e)^7 - 12*b^3*c^11*tan(1/2*f*x + 1/2*e)^7 - 28
8*a^2*b*c^10*d*tan(1/2*f*x + 1/2*e)^7 - 108*a*b^2*c^10*d*tan(1/2*f*x + 1/2*
e)^7 - 60*b^3*c^10*d*tan(1/2*f*x + 1/2*e)^7 + 240*a^3*c^9*d^2*tan(1/2*f*x +
 1/2*e)^7 + 648*a^2*b*c^9*d^2*tan(1/2*f*x + 1/2*e)^7 + 324*a*b^2*c^9*d^2*ta
n(1/2*f*x + 1/2*e)^7 + 189*b^3*c^9*d^2*tan(1/2*f*x + 1/2*e)^7 - 600*a^3*c^8
*d^3*tan(1/2*f*x + 1/2*e)^7 - 504*a^2*b*c^8*d^3*tan(1/2*f*x + 1/2*e)^7 - 89
1*a*b^2*c^8*d^3*tan(1/2*f*x + 1/2*e)^7 - 183*b^3*c^8*d^3*tan(1/2*f*x + 1/2*
e)^7 + 240*a^3*c^7*d^4*tan(1/2*f*x + 1/2*e)^7 + 459*a^2*b*c^7*d^4*tan(1/2*f
*x + 1/2*e)^7 + 801*a*b^2*c^7*d^4*tan(1/2*f*x + 1/2*e)^7 + 183*b^3*c^7*d^4*
tan(1/2*f*x + 1/2*e)^7 + 435*a^3*c^6*d^5*tan(1/2*f*x + 1/2*e)^7 - 513*a^2*b
*c^6*d^5*tan(1/2*f*x + 1/2*e)^7 - 189*a*b^2*c^6*d^5*tan(1/2*f*x + 1/2*e)^7
- 189*b^3*c^6*d^5*tan(1/2*f*x + 1/2*e)^7 - 249*a^3*c^5*d^6*tan(1/2*f*x + 1/
2*e)^7 + 153*a^2*b*c^5*d^6*tan(1/2*f*x + 1/2*e)^7 + 63*a*b^2*c^5*d^6*tan(1/
2*f*x + 1/2*e)^7 + 60*b^3*c^5*d^6*tan(1/2*f*x + 1/2*e)^7 - 291*a^3*c^4*d^7*
tan(1/2*f*x + 1/2*e)^7 + 45*a^2*b*c^4*d^7*tan(1/2*f*x + 1/2*e)^7 - 72*a*b^2
*c^4*d^7*tan(1/2*f*x + 1/2*e)^7 + 12*b^3*c^4*d^7*tan(1/2*f*x + 1/2*e)^7 + 2
73*a^3*c^3*d^8*tan(1/2*f*x + 1/2*e)^7 + 12*a^3*c^2*d^9*tan(1/2*f*x + 1/2*e)
^7 - 84*a^3*c*d^10*tan(1/2*f*x + 1/2*e)^7 + 24*a^3*d^11*tan(1/2*f*x + 1/2*e
)^7 - 216*a*b^2*c^11*tan(1/2*f*x + 1/2*e)^5 + 12*b^3*c^11*tan(1/2*f*x + 1/2
*e)^5 + 864*a^2*b*c^10*d*tan(1/2*f*x + 1/2*e)^5 + 108*a*b^2*c^10*d*tan(1/2*
f*x + 1/2*e)^5 + 212*b^3*c^10*d*tan(1/2*f*x + 1/2*e)^5 - 720*a^3*c^9*d^2*ta
n(1/2*f*x + 1/2*e)^5 - 648*a^2*b*c^9*d^2*tan(1/2*f*x + 1/2*e)^5 - 684*a*b^2
*c^9*d^2*tan(1/2*f*x + 1/2*e)^5 - 197*b^3*c^9*d^2*tan(1/2*f*x + 1/2*e)^5 +
600*a^3*c^8*d^3*tan(1/2*f*x + 1/2*e)^5 - 600*a^2*b*c^8*d^3*tan(1/2*f*x + 1/
2*e)^5 + 819*a*b^2*c^8*d^3*tan(1/2*f*x + 1/2*e)^5 - 27*b^3*c^8*d^3*tan(1/2*
f*x + 1/2*e)^5 + 1360*a^3*c^7*d^4*tan(1/2*f*x + 1/2*e)^5 + 141*a^2*b*c^7*d^
4*tan(1/2*f*x + 1/2*e)^5 + 861*a*b^2*c^7*d^4*tan(1/2*f*x + 1/2*e)^5 - 27*b^
3*c^7*d^4*tan(1/2*f*x + 1/2*e)^5 - 1051*a^3*c^6*d^5*tan(1/2*f*x + 1/2*e)^5
- 237*a^2*b*c^6*d^5*tan(1/2*f*x + 1/2*e)^5 - 807*a*b^2*c^6*d^5*tan(1/2*f*x
+ 1/2*e)^5 - 197*b^3*c^6*d^5*tan(1/2*f*x + 1/2*e)^5 - 1029*a^3*c^5*d^6*tan(
1/2*f*x + 1/2*e)^5 + 507*a^2*b*c^5*d^6*tan(1/2*f*x + 1/2*e)^5 + 39*a*b^2*c^
5*d^6*tan(1/2*f*x + 1/2*e)^5 + 212*b^3*c^5*d^6*tan(1/2*f*x + 1/2*e)^5 + 759
*a^3*c^4*d^7*tan(1/2*f*x + 1/2*e)^5 - 27*a^2*b*c^4*d^7*tan(1/2*f*x + 1/2*e)
^5 - 120*a*b^2*c^4*d^7*tan(1/2*f*x + 1/2*e)^5 + 12*b^3*c^4*d^7*tan(1/2*f*x
+ 1/2*e)^5 + 473*a^3*c^3*d^8*tan(1/2*f*x + 1/2*e)^5 - 380*a^3*c^2*d^9*tan(1
/2*f*x + 1/2*e)^5 - 84*a^3*c*d^10*tan(1/2*f*x + 1/2*e)^5 + 72*a^3*d^11*tan(
1/2*f*x + 1/2*e)^5 + 216*a*b^2*c^11*tan(1/2*f*x + 1/2*e)^3 + 12*b^3*c^11*ta
n(1/2*f*x + 1/2*e)^3 - 864*a^2*b*c^10*d*tan(1/2*f*x + 1/2*e)^3 + 108*a*b^2*
c^10*d*tan(1/2*f*x + 1/2*e)^3 - 212*b^3*c^10*d*tan(1/2*f*x + 1/2*e)^3 + 720
*a^3*c^9*d^2*tan(1/2*f*x + 1/2*e)^3 - 648*a^2*b*c^9*d^2*tan(1/2*f*x + 1/2*e
)^3 + 684*a*b^2*c^9*d^2*tan(1/2*f*x + 1/2*e)^3 - 197*b^3*c^9*d^2*tan(1/2*f*
```

```
x + 1/2*e)^3 + 600*a^3*c^8*d^3*tan(1/2*f*x + 1/2*e)^3 + 600*a^2*b*c^8*d^3*t
an(1/2*f*x + 1/2*e)^3 + 819*a*b^2*c^8*d^3*tan(1/2*f*x + 1/2*e)^3 + 27*b^3*c
^8*d^3*tan(1/2*f*x + 1/2*e)^3 - 1360*a^3*c^7*d^4*tan(1/2*f*x + 1/2*e)^3 + 1
41*a^2*b*c^7*d^4*tan(1/2*f*x + 1/2*e)^3 - 861*a*b^2*c^7*d^4*tan(1/2*f*x + 1
/2*e)^3 - 27*b^3*c^7*d^4*tan(1/2*f*x + 1/2*e)^3 - 1051*a^3*c^6*d^5*tan(1/2*
f*x + 1/2*e)^3 + 237*a^2*b*c^6*d^5*tan(1/2*f*x + 1/2*e)^3 - 807*a*b^2*c^6*d
^5*tan(1/2*f*x + 1/2*e)^3 + 197*b^3*c^6*d^5*tan(1/2*f*x + 1/2*e)^3 + 1029*a
^3*c^5*d^6*tan(1/2*f*x + 1/2*e)^3 + 507*a^2*b*c^5*d^6*tan(1/2*f*x + 1/2*e)^
3 - 39*a*b^2*c^5*d^6*tan(1/2*f*x + 1/2*e)^3 + 212*b^3*c^5*d^6*tan(1/2*f*x +
 1/2*e)^3 + 759*a^3*c^4*d^7*tan(1/2*f*x + 1/2*e)^3 + 27*a^2*b*c^4*d^7*tan(1
/2*f*x + 1/2*e)^3 - 120*a*b^2*c^4*d^7*tan(1/2*f*x + 1/2*e)^3 - 12*b^3*c^4*d
^7*tan(1/2*f*x + 1/2*e)^3 - 473*a^3*c^3*d^8*tan(1/2*f*x + 1/2*e)^3 - 380*a^
3*c^2*d^9*tan(1/2*f*x + 1/2*e)^3 + 84*a^3*c*d^10*tan(1/2*f*x + 1/2*e)^3 + 7
2*a^3*d^11*tan(1/2*f*x + 1/2*e)^3 - 72*a*b^2*c^11*tan(1/2*f*x + 1/2*e) - 12
*b^3*c^11*tan(1/2*f*x + 1/2*e) + 288*a^2*b*c^10*d*tan(1/2*f*x + 1/2*e) - 10
8*a*b^2*c^10*d*tan(1/2*f*x + 1/2*e) + 60*b^3*c^10*d*tan(1/2*f*x + 1/2*e) -
240*a^3*c^9*d^2*tan(1/2*f*x + 1/2*e) + 648*a^2*b*c^9*d^2*tan(1/2*f*x + 1/2*
e) - 324*a*b^2*c^9*d^2*tan(1/2*f*x + 1/2*e) + 189*b^3*c^9*d^2*tan(1/2*f*x +
 1/2*e) - 600*a^3*c^8*d^3*tan(1/2*f*x + 1/2*e) + 504*a^2*b*c^8*d^3*tan(1/2*
f*x + 1/2*e) - 891*a*b^2*c^8*d^3*tan(1/2*f*x + 1/2*e) + 183*b^3*c^8*d^3*tan
(1/2*f*x + 1/2*e) - 240*a^3*c^7*d^4*tan(1/2*f*x + 1/2*e) + 459*a^2*b*c^7*d^
4*tan(1/2*f*x + 1/2*e) - 801*a*b^2*c^7*d^4*tan(1/2*f*x + 1/2*e) + 183*b^3*c
^7*d^4*tan(1/2*f*x + 1/2*e) + 435*a^3*c^6*d^5*tan(1/2*f*x + 1/2*e) + 513*a^
2*b*c^6*d^5*tan(1/2*f*x + 1/2*e) - 189*a*b^2*c^6*d^5*tan(1/2*f*x + 1/2*e) +
 189*b^3*c^6*d^5*tan(1/2*f*x + 1/2*e) + 249*a^3*c^5*d^6*tan(1/2*f*x + 1/2*e
) + 153*a^2*b*c^5*d^6*tan(1/2*f*x + 1/2*e) - 63*a*b^2*c^5*d^6*tan(1/2*f*x +
 1/2*e) + 60*b^3*c^5*d^6*tan(1/2*f*x + 1/2*e) - 291*a^3*c^4*d^7*tan(1/2*f*x
 + 1/2*e) - 45*a^2*b*c^4*d^7*tan(1/2*f*x + 1/2*e) - 72*a*b^2*c^4*d^7*tan(1/
2*f*x + 1/2*e) - 12*b^3*c^4*d^7*tan(1/2*f*x + 1/2*e) - 273*a^3*c^3*d^8*tan(
1/2*f*x + 1/2*e) + 12*a^3*c^2*d^9*tan(1/2*f*x + 1/2*e) + 84*a^3*c*d^10*tan(
1/2*f*x + 1/2*e) + 24*a^3*d^11*tan(1/2*f*x + 1/2*e))/((c^12 - 4*c^10*d^2 +
6*c^8*d^4 - 4*c^6*d^6 + c^4*d^8)*(c*tan(1/2*f*x + 1/2*e)^2 - d*tan(1/2*f*x
+ 1/2*e)^2 - c - d)^4))/f
```

maple [B] time = 0.80, size = 8573, normalized size = 13.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^5,x)
```

```
[Out] result too large to display
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^3/(c+d*sec(f*x+e))^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*c^2-4*d^2>0)', see `assume?` for
more details)Is 4*c^2-4*d^2 positive or negative?
```

mupad [B] time = 16.35, size = 21021, normalized size = 33.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^3/(c + d/cos(e + f*x))^5,x)
```

```
[Out] (atan(((((c + d)^9*(c - d)^9)^(1/2)*((tan(e/2 + (f*x)/2)*(64*a^6*c^18 + 128
*a^6*d^18 + 16*b^6*c^18 - 128*a^6*c*d^17 - 128*a^6*c^17*d + 192*a^2*b^4*c^1
8 + 576*a^4*b^2*c^18 - 1024*a^6*c^2*d^16 + 1024*a^6*c^3*d^15 + 3584*a^6*c^4
*d^14 - 3584*a^6*c^5*d^13 - 6968*a^6*c^6*d^12 + 7168*a^6*c^7*d^11 + 8385*a^
6*c^8*d^10 - 8960*a^6*c^9*d^9 - 7024*a^6*c^10*d^8 + 7168*a^6*c^11*d^7 + 484
8*a^6*c^12*d^6 - 3584*a^6*c^13*d^5 - 1920*a^6*c^14*d^4 + 1024*a^6*c^15*d^3
+ 1152*a^6*c^16*d^2 + 16*b^6*c^10*d^8 + 216*b^6*c^12*d^6 + 761*b^6*c^14*d^4
 + 216*b^6*c^16*d^2 - 360*a*b^5*c^11*d^7 - 2910*a*b^5*c^13*d^5 - 3600*a*b^5
*c^15*d^3 - 3200*a^3*b^3*c^17*d - 144*a^5*b*c^5*d^13 - 504*a^5*b*c^7*d^11 +
 3666*a^5*b*c^9*d^9 - 6624*a^5*b*c^11*d^7 + 2016*a^5*b*c^13*d^5 - 3840*a^5*
b*c^15*d^3 + 72*a^2*b^4*c^10*d^8 + 3087*a^2*b^4*c^12*d^6 + 9552*a^2*b^4*c^1
4*d^4 + 5472*a^2*b^4*c^16*d^2 - 64*a^3*b^3*c^5*d^13 - 144*a^3*b^3*c^7*d^11
+ 1376*a^3*b^3*c^9*d^9 - 3604*a^3*b^3*c^11*d^7 - 6224*a^3*b^3*c^13*d^5 - 12
640*a^3*b^3*c^15*d^3 + 720*a^4*b^2*c^6*d^12 - 2280*a^4*b^2*c^8*d^10 + 1431*
a^4*b^2*c^10*d^8 + 5256*a^4*b^2*c^12*d^6 + 4416*a^4*b^2*c^14*d^4 + 8256*a^4
*b^2*c^16*d^2 - 480*a*b^5*c^17*d - 1920*a^5*b*c^17*d))/(2*(c^22*d + c^23 -
c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^
10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 +
21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)) + (((32*a^3*c^27 + 16*b^3*c^27 + 96
*a^2*b*c^27 - 160*a^3*c^26*d - 16*b^3*c^26*d - 32*a^3*c^10*d^17 + 16*a^3*c^
11*d^16 + 272*a^3*c^12*d^15 - 132*a^3*c^13*d^14 - 1020*a^3*c^14*d^13 + 528*
a^3*c^15*d^12 + 2160*a^3*c^16*d^11 - 1112*a^3*c^17*d^10 - 2920*a^3*c^18*d^9
 + 1280*a^3*c^19*d^8 + 2752*a^3*c^20*d^7 - 836*a^3*c^21*d^6 - 1852*a^3*c^22
*d^5 + 352*a^3*c^23*d^4 + 800*a^3*c^24*d^3 - 128*a^3*c^25*d^2 - 16*b^3*c^14
*d^13 + 16*b^3*c^15*d^12 - 44*b^3*c^16*d^11 + 44*b^3*c^17*d^10 + 320*b^3*c^
18*d^9 - 320*b^3*c^19*d^8 - 520*b^3*c^20*d^7 + 520*b^3*c^21*d^6 + 320*b^3*c
^22*d^5 - 320*b^3*c^23*d^4 - 44*b^3*c^24*d^3 + 44*b^3*c^25*d^2 + 180*a*b^2*
c^15*d^12 - 180*a*b^2*c^16*d^11 - 480*a*b^2*c^17*d^10 + 480*a*b^2*c^18*d^9
+ 120*a*b^2*c^19*d^8 - 120*a*b^2*c^20*d^7 + 720*a*b^2*c^21*d^6 - 720*a*b^2*
c^22*d^5 - 780*a*b^2*c^23*d^4 + 780*a*b^2*c^24*d^3 + 240*a*b^2*c^25*d^2 - 3
6*a^2*b*c^14*d^13 + 36*a^2*b*c^15*d^12 - 144*a^2*b*c^16*d^11 + 144*a^2*b*c^
17*d^10 + 840*a^2*b*c^18*d^9 - 840*a^2*b*c^19*d^8 - 1200*a^2*b*c^20*d^7 + 1
200*a^2*b*c^21*d^6 + 540*a^2*b*c^22*d^5 - 540*a^2*b*c^23*d^4 + 96*a^2*b*c^2
4*d^3 - 96*a^2*b*c^25*d^2 - 240*a*b^2*c^26*d - 96*a^2*b*c^26*d)/(c^26*d + c
^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^16*d^11 - 21
*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d^6 + 21*c^2
2*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) - (tan(e/2 + (f*x)/2)*((c +
d)^9*(c - d)^9)^(1/2)*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d
+ 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3
*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2
*c^8*d)*(128*c^27*d - 128*c^10*d^18 + 128*c^11*d^17 + 1024*c^12*d^16 - 1024
*c^13*d^15 - 3584*c^14*d^14 + 3584*c^15*d^13 + 7168*c^16*d^12 - 7168*c^17*d
^11 - 8960*c^18*d^10 + 8960*c^19*d^9 + 7168*c^20*d^8 - 7168*c^21*d^7 - 3584
*c^22*d^6 + 3584*c^23*d^5 + 1024*c^24*d^4 - 1024*c^25*d^3 - 128*c^26*d^2))/
(16*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d
^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)*(c^22*d + c^23
 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13
*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5
 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)))*((c + d)^9*(c - d)^9)^(1/2)*(4*
b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3
*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d
^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*d))/(8*(c^23 - c^5*d
^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^
8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)))*(4*b^3*c^9 - 8*a^3*d^9 + 24*a
^2*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3
+ 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*
a^2*b*c^7*d^2 - 60*a*b^2*c^8*d)*1i)/(8*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c
^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^
```

```
19*d^4 - 9*c^21*d^2)) + (((c + d)^9*(c - d)^9)^(1/2)*((tan(e/2 + (f*x)/2)*(
64*a^6*c^18 + 128*a^6*d^18 + 16*b^6*c^18 - 128*a^6*c*d^17 - 128*a^6*c^17*d
+ 192*a^2*b^4*c^18 + 576*a^4*b^2*c^18 - 1024*a^6*c^2*d^16 + 1024*a^6*c^3*d^
15 + 3584*a^6*c^4*d^14 - 3584*a^6*c^5*d^13 - 6968*a^6*c^6*d^12 + 7168*a^6*c
^7*d^11 + 8385*a^6*c^8*d^10 - 8960*a^6*c^9*d^9 - 7024*a^6*c^10*d^8 + 7168*a
^6*c^11*d^7 + 4848*a^6*c^12*d^6 - 3584*a^6*c^13*d^5 - 1920*a^6*c^14*d^4 + 1
024*a^6*c^15*d^3 + 1152*a^6*c^16*d^2 + 16*b^6*c^10*d^8 + 216*b^6*c^12*d^6 +
 761*b^6*c^14*d^4 + 216*b^6*c^16*d^2 - 360*a*b^5*c^11*d^7 - 2910*a*b^5*c^13
*d^5 - 3600*a*b^5*c^15*d^3 - 3200*a^3*b^3*c^17*d - 144*a^5*b*c^5*d^13 - 504
*a^5*b*c^7*d^11 + 3666*a^5*b*c^9*d^9 - 6624*a^5*b*c^11*d^7 + 2016*a^5*b*c^1
3*d^5 - 3840*a^5*b*c^15*d^3 + 72*a^2*b^4*c^10*d^8 + 3087*a^2*b^4*c^12*d^6 +
 9552*a^2*b^4*c^14*d^4 + 5472*a^2*b^4*c^16*d^2 - 64*a^3*b^3*c^5*d^13 - 144*
a^3*b^3*c^7*d^11 + 1376*a^3*b^3*c^9*d^9 - 3604*a^3*b^3*c^11*d^7 - 6224*a^3*
b^3*c^13*d^5 - 12640*a^3*b^3*c^15*d^3 + 720*a^4*b^2*c^6*d^12 - 2280*a^4*b^2
*c^8*d^10 + 1431*a^4*b^2*c^10*d^8 + 5256*a^4*b^2*c^12*d^6 + 4416*a^4*b^2*c^
14*d^4 + 8256*a^4*b^2*c^16*d^2 - 480*a*b^5*c^17*d - 1920*a^5*b*c^17*d))/(2*
(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*
d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6
 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)) - (((32*a^3*c^27 +
 16*b^3*c^27 + 96*a^2*b*c^27 - 160*a^3*c^26*d - 16*b^3*c^26*d - 32*a^3*c^10
*d^17 + 16*a^3*c^11*d^16 + 272*a^3*c^12*d^15 - 132*a^3*c^13*d^14 - 1020*a^3
*c^14*d^13 + 528*a^3*c^15*d^12 + 2160*a^3*c^16*d^11 - 1112*a^3*c^17*d^10 -
2920*a^3*c^18*d^9 + 1280*a^3*c^19*d^8 + 2752*a^3*c^20*d^7 - 836*a^3*c^21*d^
6 - 1852*a^3*c^22*d^5 + 352*a^3*c^23*d^4 + 800*a^3*c^24*d^3 - 128*a^3*c^25*
d^2 - 16*b^3*c^14*d^13 + 16*b^3*c^15*d^12 - 44*b^3*c^16*d^11 + 44*b^3*c^17*
d^10 + 320*b^3*c^18*d^9 - 320*b^3*c^19*d^8 - 520*b^3*c^20*d^7 + 520*b^3*c^2
1*d^6 + 320*b^3*c^22*d^5 - 320*b^3*c^23*d^4 - 44*b^3*c^24*d^3 + 44*b^3*c^25
*d^2 + 180*a*b^2*c^15*d^12 - 180*a*b^2*c^16*d^11 - 480*a*b^2*c^17*d^10 + 48
0*a*b^2*c^18*d^9 + 120*a*b^2*c^19*d^8 - 120*a*b^2*c^20*d^7 + 720*a*b^2*c^21
*d^6 - 720*a*b^2*c^22*d^5 - 780*a*b^2*c^23*d^4 + 780*a*b^2*c^24*d^3 + 240*a
*b^2*c^25*d^2 - 36*a^2*b*c^14*d^13 + 36*a^2*b*c^15*d^12 - 144*a^2*b*c^16*d^
11 + 144*a^2*b*c^17*d^10 + 840*a^2*b*c^18*d^9 - 840*a^2*b*c^19*d^8 - 1200*a
^2*b*c^20*d^7 + 1200*a^2*b*c^21*d^6 + 540*a^2*b*c^22*d^5 - 540*a^2*b*c^23*d
^4 + 96*a^2*b*c^24*d^3 - 96*a^2*b*c^25*d^2 - 240*a*b^2*c^26*d - 96*a^2*b*c^
26*d)/(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 -
21*c^16*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*
c^21*d^6 + 21*c^22*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) + (tan(e/2
+ (f*x)/2)*((c + d)^9*(c - d)^9)^(1/2)*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^
9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3
*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c
^7*d^2 - 60*a*b^2*c^8*d)*(128*c^27*d - 128*c^10*d^18 + 128*c^11*d^17 + 1024
*c^12*d^16 - 1024*c^13*d^15 - 3584*c^14*d^14 + 3584*c^15*d^13 + 7168*c^16*d
^12 - 7168*c^17*d^11 - 8960*c^18*d^10 + 8960*c^19*d^9 + 7168*c^20*d^8 - 716
8*c^21*d^7 - 3584*c^22*d^6 + 3584*c^23*d^5 + 1024*c^24*d^4 - 1024*c^25*d^3
- 128*c^26*d^2))/(16*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*
d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^
2)*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^
12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*
d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)))*((c + d)^9*(c
- d)^9)^(1/2)*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*a^3
*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2
 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*d))
/(8*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d
^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)))*(4*b^3*c^9 -
 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5
+ 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^
2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*d)*1i)/(8*(c^23 - c^5*d^18 +
9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84
*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)))/((64*a^9*d^17 - 192*a^8*b*c^17 - 32
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*a^9*c*d^16 + 320*a^9*c^16*d + 16*a^3*b^6*c^17 + 192*a^5*b^4*c^17 - 32*a^6*b^3*c^17 + 576*a^7*b^2*c^17 - 544*a^9*c^2*d^15 + 264*a^9*c^3*d^14 + 2040*a^9*c^4*d^13 - 856*a^9*c^5*d^12 - 4320*a^9*c^6*d^11 + 1649*a^9*c^7*d^10 + 5840*a^9*c^8*d^9 - 2416*a^9*c^9*d^8 - 5504*a^9*c^10*d^7 + 2936*a^9*c^11*d^6 + 3704*a^9*c^12*d^5 - 1600*a^9*c^13*d^4 - 1600*a^9*c^14*d^3 + 1280*a^9*c^15*d^2 - 480*a^4*b^5*c^16*d - 3168*a^6*b^3*c^16*d + 480*a^7*b^2*c^16*d - 72*a^8*b*c^4*d^13 - 72*a^8*b*c^5*d^12 - 216*a^8*b*c^6*d^11 - 288*a^8*b*c^7*d^10 + 1986*a^8*b*c^8*d^9 + 1680*a^8*b*c^9*d^8 - 4224*a^8*b*c^10*d^7 - 2400*a^8*b*c^11*d^6 + 936*a^8*b*c^12*d^5 + 1080*a^8*b*c^13*d^4 - 4032*a^8*b*c^14*d^3 + 192*a^8*b*c^15*d^2 + 16*a^3*b^6*c^9*d^8 + 216*a^3*b^6*c^11*d^6 + 761*a^3*b^6*c^13*d^4 + 216*a^3*b^6*c^15*d^2 - 360*a^4*b^5*c^10*d^7 - 2910*a^4*b^5*c^12*d^5 - 3600*a^4*b^5*c^14*d^3 + 72*a^5*b^4*c^9*d^8 + 3087*a^5*b^4*c^11*d^6 + 9552*a^5*b^4*c^13*d^4 + 5472*a^5*b^4*c^15*d^2 - 32*a^6*b^3*c^4*d^13 - 32*a^6*b^3*c^5*d^12 - 56*a^6*b^3*c^6*d^11 - 88*a^6*b^3*c^7*d^10 + 736*a^6*b^3*c^8*d^9 + 640*a^6*b^3*c^9*d^8 - 2564*a^6*b^3*c^10*d^7 - 1040*a^6*b^3*c^11*d^6 - 6864*a^6*b^3*c^12*d^5 + 640*a^6*b^3*c^13*d^4 - 12552*a^6*b^3*c^14*d^3 - 88*a^6*b^3*c^15*d^2 + 360*a^7*b^2*c^5*d^12 + 360*a^7*b^2*c^6*d^11 - 1320*a^7*b^2*c^7*d^10 - 960*a^7*b^2*c^8*d^9 + 1191*a^7*b^2*c^9*d^8 + 240*a^7*b^2*c^10*d^7 + 3816*a^7*b^2*c^11*d^6 + 1440*a^7*b^2*c^12*d^5 + 5976*a^7*b^2*c^13*d^4 - 1560*a^7*b^2*c^14*d^3 + 7776*a^7*b^2*c^15*d^2 - 1728*a^8*b*c^16*d)/(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^16*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d^6 + 21*c^22*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) - (((c + d)^9*(c - d)^9)^(1/2)*((tan(e/2 + (f*x)/2)*(64*a^6*c^18 + 128*a^6*d^18 + 16*b^6*c^18 - 128*a^6*c*d^17 - 128*a^6*c^17*d + 192*a^2*b^4*c^18 + 576*a^4*b^2*c^18 - 1024*a^6*c^2*d^16 + 1024*a^6*c^3*d^15 + 3584*a^6*c^4*d^14 - 3584*a^6*c^5*d^13 - 6968*a^6*c^6*d^12 + 7168*a^6*c^7*d^11 + 8385*a^6*c^8*d^10 - 8960*a^6*c^9*d^9 - 7024*a^6*c^10*d^8 + 7168*a^6*c^11*d^7 + 4848*a^6*c^12*d^6 - 3584*a^6*c^13*d^5 - 1920*a^6*c^14*d^4 + 1024*a^6*c^15*d^3 + 1152*a^6*c^16*d^2 + 16*b^6*c^10*d^8 + 216*b^6*c^12*d^6 + 761*b^6*c^14*d^4 + 216*b^6*c^16*d^2 - 360*a*b^5*c^11*d^7 - 2910*a*b^5*c^13*d^5 - 3600*a*b^5*c^15*d^3 - 3200*a^3*b^3*c^17*d - 144*a^5*b*c^5*d^13 - 504*a^5*b*c^7*d^11 + 3666*a^5*b*c^9*d^9 - 6624*a^5*b*c^11*d^7 + 2016*a^5*b*c^13*d^5 - 3840*a^5*b*c^15*d^3 + 72*a^2*b^4*c^10*d^8 + 3087*a^2*b^4*c^12*d^6 + 9552*a^2*b^4*c^14*d^4 + 5472*a^2*b^4*c^16*d^2 - 64*a^3*b^3*c^5*d^13 - 144*a^3*b^3*c^7*d^11 + 1376*a^3*b^3*c^9*d^9 - 3604*a^3*b^3*c^11*d^7 - 6224*a^3*b^3*c^13*d^5 - 12640*a^3*b^3*c^15*d^3 + 720*a^4*b^2*c^6*d^12 - 2280*a^4*b^2*c^8*d^10 + 1431*a^4*b^2*c^10*d^8 + 5256*a^4*b^2*c^12*d^6 + 4416*a^4*b^2*c^14*d^4 + 8256*a^4*b^2*c^16*d^2 - 480*a*b^5*c^17*d - 1920*a^5*b*c^17*d))/(2*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)) + (((32*a^3*c^27 + 16*b^3*c^27 + 96*a^2*b*c^27 - 160*a^3*c^26*d - 16*b^3*c^26*d - 32*a^3*c^10*d^17 + 16*a^3*c^11*d^16 + 272*a^3*c^12*d^15 - 132*a^3*c^13*d^14 - 1020*a^3*c^14*d^13 + 528*a^3*c^15*d^12 + 2160*a^3*c^16*d^11 - 1112*a^3*c^17*d^10 - 2920*a^3*c^18*d^9 + 1280*a^3*c^19*d^8 + 2752*a^3*c^20*d^7 - 836*a^3*c^21*d^6 - 1852*a^3*c^22*d^5 + 352*a^3*c^23*d^4 + 800*a^3*c^24*d^3 - 128*a^3*c^25*d^2 - 16*b^3*c^14*d^13 + 16*b^3*c^15*d^12 - 44*b^3*c^16*d^11 + 44*b^3*c^17*d^10 + 320*b^3*c^18*d^9 - 320*b^3*c^19*d^8 - 520*b^3*c^20*d^7 + 520*b^3*c^21*d^6 + 320*b^3*c^22*d^5 - 320*b^3*c^23*d^4 - 44*b^3*c^24*d^3 + 44*b^3*c^25*d^2 + 180*a*b^2*c^15*d^12 - 180*a*b^2*c^16*d^11 - 480*a*b^2*c^17*d^10 + 480*a*b^2*c^18*d^9 + 120*a*b^2*c^19*d^8 - 120*a*b^2*c^20*d^7 + 720*a*b^2*c^21*d^6 - 720*a*b^2*c^22*d^5 - 780*a*b^2*c^23*d^4 + 780*a*b^2*c^24*d^3 + 240*a*b^2*c^25*d^2 - 36*a^2*b*c^14*d^13 + 36*a^2*b*c^15*d^12 - 144*a^2*b*c^16*d^11 + 144*a^2*b*c^17*d^10 + 840*a^2*b*c^18*d^9 - 840*a^2*b*c^19*d^8 - 1200*a^2*b*c^20*d^7 + 1200*a^2*b*c^21*d^6 + 540*a^2*b*c^22*d^5 - 540*a^2*b*c^23*d^4 + 96*a^2*b*c^24*d^3 - 96*a^2*b*c^25*d^2 - 240*a*b^2*c^26*d - 96*a^2*b*c^26*d)/(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^16*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d^6 + 21*c^22*d^5 + 21*c^23*d^4

- 7*c^24*d^3 - 7*c^25*d^2) - (tan(e/2 + (f*x)/2)*((c + d)^9*(c - d)^9)^(1/2)*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*d)*(128*c^27*d - 128*c^10*d^18 + 128*c^11*d^17 + 1024*c^12*d^16 - 1024*c^13*d^15 - 3584*c^14*d^14 + 3584*c^15*d^13 + 7168*c^16*d^12 - 7168*c^17*d^11 - 8960*c^18*d^10 + 8960*c^19*d^9 + 7168*c^20*d^8 - 7168*c^21*d^7 - 3584*c^22*d^6 + 3584*c^23*d^5 + 1024*c^24*d^4 - 1024*c^25*d^3 - 128*c^26*d^2))/(16*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)))*((c + d)^9*(c - d)^9)^(1/2)*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*d))/(8*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)))*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*d))/(8*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)) + (((c + d)^9*(c - d)^9)^(1/2)*((tan(e/2 + (f*x)/2)*(64*a^6*c^18 + 128*a^6*d^18 + 16*b^6*c^18 - 128*a^6*c*d^17 - 128*a^6*c^17*d + 192*a^2*b^4*c^18 + 576*a^4*b^2*c^18 - 1024*a^6*c^2*d^16 + 1024*a^6*c^3*d^15 + 3584*a^6*c^4*d^14 - 3584*a^6*c^5*d^13 - 6968*a^6*c^6*d^12 + 7168*a^6*c^7*d^11 + 8385*a^6*c^8*d^10 - 8960*a^6*c^9*d^9 - 7024*a^6*c^10*d^8 + 7168*a^6*c^11*d^7 + 4848*a^6*c^12*d^6 - 3584*a^6*c^13*d^5 - 1920*a^6*c^14*d^4 + 1024*a^6*c^15*d^3 + 1152*a^6*c^16*d^2 + 16*b^6*c^10*d^8 + 216*b^6*c^12*d^6 + 761*b^6*c^14*d^4 + 216*b^6*c^16*d^2 - 360*a*b^5*c^11*d^7 - 2910*a*b^5*c^13*d^5 - 3600*a*b^5*c^15*d^3 - 3200*a^3*b^3*c^17*d - 144*a^5*b*c^5*d^13 - 504*a^5*b*c^7*d^11 + 3666*a^5*b*c^9*d^9 - 6624*a^5*b*c^11*d^7 + 2016*a^5*b*c^13*d^5 - 3840*a^5*b*c^15*d^3 + 72*a^2*b^4*c^10*d^8 + 3087*a^2*b^4*c^12*d^6 + 9552*a^2*b^4*c^14*d^4 + 5472*a^2*b^4*c^16*d^2 - 64*a^3*b^3*c^5*d^13 - 144*a^3*b^3*c^7*d^11 + 1376*a^3*b^3*c^9*d^9 - 3604*a^3*b^3*c^11*d^7 - 6224*a^3*b^3*c^13*d^5 - 12640*a^3*b^3*c^15*d^3 + 720*a^4*b^2*c^6*d^12 - 2280*a^4*b^2*c^8*d^10 + 1431*a^4*b^2*c^10*d^8 + 5256*a^4*b^2*c^12*d^6 + 4416*a^4*b^2*c^14*d^4 + 8256*a^4*b^2*c^16*d^2 - 480*a*b^5*c^17*d - 1920*a^5*b*c^17*d))/(2*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)) - (((32*a^3*c^27 + 16*b^3*c^27 + 96*a^2*b*c^27 - 160*a^3*c^26*d - 16*b^3*c^26*d - 32*a^3*c^10*d^17 + 16*a^3*c^11*d^16 + 272*a^3*c^12*d^15 - 132*a^3*c^13*d^14 - 1020*a^3*c^14*d^13 + 528*a^3*c^15*d^12 + 2160*a^3*c^16*d^11 - 1112*a^3*c^17*d^10 - 2920*a^3*c^18*d^9 + 1280*a^3*c^19*d^8 + 2752*a^3*c^20*d^7 - 836*a^3*c^21*d^6 - 1852*a^3*c^22*d^5 + 352*a^3*c^23*d^4 + 800*a^3*c^24*d^3 - 128*a^3*c^25*d^2 - 16*b^3*c^14*d^13 + 16*b^3*c^15*d^12 - 44*b^3*c^16*d^11 + 44*b^3*c^17*d^10 + 320*b^3*c^18*d^9 - 320*b^3*c^19*d^8 - 520*b^3*c^20*d^7 + 520*b^3*c^21*d^6 + 320*b^3*c^22*d^5 - 320*b^3*c^23*d^4 - 44*b^3*c^24*d^3 + 44*b^3*c^25*d^2 + 180*a*b^2*c^15*d^12 - 180*a*b^2*c^16*d^11 - 480*a*b^2*c^17*d^10 + 480*a*b^2*c^18*d^9 + 120*a*b^2*c^19*d^8 - 120*a*b^2*c^20*d^7 + 720*a*b^2*c^21*d^6 - 720*a*b^2*c^22*d^5 - 780*a*b^2*c^23*d^4 + 780*a*b^2*c^24*d^3 + 240*a*b^2*c^25*d^2 - 36*a^2*b*c^14*d^13 + 36*a^2*b*c^15*d^12 - 144*a^2*b*c^16*d^11 + 144*a^2*b*c^17*d^10 + 840*a^2*b*c^18*d^9 - 840*a^2*b*c^19*d^8 - 1200*a^2*b*c^20*d^7 + 1200*a^2*b*c^21*d^6 + 540*a^2*b*c^22*d^5 - 540*a^2*b*c^23*d^4 + 96*a^2*b*c^24*d^3 - 96*a^2*b*c^25*d^2 - 240*a*b^2*c^26*d - 96*a^2*b*c^26*d)/(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^16*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d^6 + 21*c^22*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) + (tan(e/2 + (f*x)/2)*((c + d)^9*

(c - d)^9)^(1/2)*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*
a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*
d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*
d)*(128*c^27*d - 128*c^10*d^18 + 128*c^11*d^17 + 1024*c^12*d^16 - 1024*c^13
*d^15 - 3584*c^14*d^14 + 3584*c^15*d^13 + 7168*c^16*d^12 - 7168*c^17*d^11 -
8960*c^18*d^10 + 8960*c^19*d^9 + 7168*c^20*d^8 - 7168*c^21*d^7 - 3584*c^22
*d^6 + 3584*c^23*d^5 + 1024*c^24*d^4 - 1024*c^25*d^3 - 128*c^26*d^2))/(16*(
c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 +
126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)*(c^22*d + c^23 - c^
8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10
+ 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21
*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)))*((c + d)^9*(c - d)^9)^(1/2)*(4*b^3*c
^9 - 8*a^3*d^9 + 24*a^2*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*
d^5 + 40*a^3*c^6*d^3 + 4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 +
9*a^2*b*c^5*d^4 + 72*a^2*b*c^7*d^2 - 60*a*b^2*c^8*d))/(8*(c^23 - c^5*d^18 +
9*c^7*d^16 - 36*c^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 8
4*c^17*d^6 + 36*c^19*d^4 - 9*c^21*d^2)))*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2*b*
c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 + 4*b
^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^2*b
*c^7*d^2 - 60*a*b^2*c^8*d))/(8*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c^9*d^14
+ 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^19*d^4 -
9*c^21*d^2))))*((c + d)^9*(c - d)^9)^(1/2)*(4*b^3*c^9 - 8*a^3*d^9 + 24*a^2
*b*c^9 - 40*a^3*c^8*d + 36*a^3*c^2*d^7 - 63*a^3*c^4*d^5 + 40*a^3*c^6*d^3 +
4*b^3*c^5*d^4 + 27*b^3*c^7*d^2 - 45*a*b^2*c^6*d^3 + 9*a^2*b*c^5*d^4 + 72*a^
2*b*c^7*d^2 - 60*a*b^2*c^8*d)*1i)/(4*f*(c^23 - c^5*d^18 + 9*c^7*d^16 - 36*c
^9*d^14 + 84*c^11*d^12 - 126*c^13*d^10 + 126*c^15*d^8 - 84*c^17*d^6 + 36*c^
19*d^4 - 9*c^21*d^2)) - (2*a^3*atan(-((a^3*((tan(e/2 + (f*x)/2)*(64*a^6*c^1
8 + 128*a^6*d^18 + 16*b^6*c^18 - 128*a^6*c*d^17 - 128*a^6*c^17*d + 192*a^2*
b^4*c^18 + 576*a^4*b^2*c^18 - 1024*a^6*c^2*d^16 + 1024*a^6*c^3*d^15 + 3584*
a^6*c^4*d^14 - 3584*a^6*c^5*d^13 - 6968*a^6*c^6*d^12 + 7168*a^6*c^7*d^11 +
8385*a^6*c^8*d^10 - 8960*a^6*c^9*d^9 - 7024*a^6*c^10*d^8 + 7168*a^6*c^11*d^
7 + 4848*a^6*c^12*d^6 - 3584*a^6*c^13*d^5 - 1920*a^6*c^14*d^4 + 1024*a^6*c^
15*d^3 + 1152*a^6*c^16*d^2 + 16*b^6*c^10*d^8 + 216*b^6*c^12*d^6 + 761*b^6*c
^14*d^4 + 216*b^6*c^16*d^2 - 360*a*b^5*c^11*d^7 - 2910*a*b^5*c^13*d^5 - 360
0*a*b^5*c^15*d^3 - 3200*a^3*b^3*c^17*d - 144*a^5*b*c^5*d^13 - 504*a^5*b*c^7
*d^11 + 3666*a^5*b*c^9*d^9 - 6624*a^5*b*c^11*d^7 + 2016*a^5*b*c^13*d^5 - 38
40*a^5*b*c^15*d^3 + 72*a^2*b^4*c^10*d^8 + 3087*a^2*b^4*c^12*d^6 + 9552*a^2*
b^4*c^14*d^4 + 5472*a^2*b^4*c^16*d^2 - 64*a^3*b^3*c^5*d^13 - 144*a^3*b^3*c^
7*d^11 + 1376*a^3*b^3*c^9*d^9 - 3604*a^3*b^3*c^11*d^7 - 6224*a^3*b^3*c^13*d
^5 - 12640*a^3*b^3*c^15*d^3 + 720*a^4*b^2*c^6*d^12 - 2280*a^4*b^2*c^8*d^10
+ 1431*a^4*b^2*c^10*d^8 + 5256*a^4*b^2*c^12*d^6 + 4416*a^4*b^2*c^14*d^4 + 8
256*a^4*b^2*c^16*d^2 - 480*a*b^5*c^17*d - 1920*a^5*b*c^17*d))/(2*(c^22*d +
c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*
c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18
*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)) + (a^3*((32*a^3*c^27 + 16*b^
3*c^27 + 96*a^2*b*c^27 - 160*a^3*c^26*d - 16*b^3*c^26*d - 32*a^3*c^10*d^17
+ 16*a^3*c^11*d^16 + 272*a^3*c^12*d^15 - 132*a^3*c^13*d^14 - 1020*a^3*c^14*
d^13 + 528*a^3*c^15*d^12 + 2160*a^3*c^16*d^11 - 1112*a^3*c^17*d^10 - 2920*a
^3*c^18*d^9 + 1280*a^3*c^19*d^8 + 2752*a^3*c^20*d^7 - 836*a^3*c^21*d^6 - 18
52*a^3*c^22*d^5 + 352*a^3*c^23*d^4 + 800*a^3*c^24*d^3 - 128*a^3*c^25*d^2 -
16*b^3*c^14*d^13 + 16*b^3*c^15*d^12 - 44*b^3*c^16*d^11 + 44*b^3*c^17*d^10 +
320*b^3*c^18*d^9 - 320*b^3*c^19*d^8 - 520*b^3*c^20*d^7 + 520*b^3*c^21*d^6
+ 320*b^3*c^22*d^5 - 320*b^3*c^23*d^4 - 44*b^3*c^24*d^3 + 44*b^3*c^25*d^2 +
180*a*b^2*c^15*d^12 - 180*a*b^2*c^16*d^11 - 480*a*b^2*c^17*d^10 + 480*a*b^
2*c^18*d^9 + 120*a*b^2*c^19*d^8 - 120*a*b^2*c^20*d^7 + 720*a*b^2*c^21*d^6 -
720*a*b^2*c^22*d^5 - 780*a*b^2*c^23*d^4 + 780*a*b^2*c^24*d^3 + 240*a*b^2*c
^25*d^2 - 36*a^2*b*c^14*d^13 + 36*a^2*b*c^15*d^12 - 144*a^2*b*c^16*d^11 + 1
44*a^2*b*c^17*d^10 + 840*a^2*b*c^18*d^9 - 840*a^2*b*c^19*d^8 - 1200*a^2*b*c
^20*d^7 + 1200*a^2*b*c^21*d^6 + 540*a^2*b*c^22*d^5 - 540*a^2*b*c^23*d^4 + 9

6*a^2*b*c^24*d^3 - 96*a^2*b*c^25*d^2 - 240*a*b^2*c^26*d - 96*a^2*b*c^26*d)/
(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^1
6*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d
^6 + 21*c^22*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) - (a^3*tan(e/2 +
(f*x)/2)*(128*c^27*d - 128*c^10*d^18 + 128*c^11*d^17 + 1024*c^12*d^16 - 102
4*c^13*d^15 - 3584*c^14*d^14 + 3584*c^15*d^13 + 7168*c^16*d^12 - 7168*c^17*
d^11 - 8960*c^18*d^10 + 8960*c^19*d^9 + 7168*c^20*d^8 - 7168*c^21*d^7 - 358
4*c^22*d^6 + 3584*c^23*d^5 + 1024*c^24*d^4 - 1024*c^25*d^3 - 128*c^26*d^2)*
1i)/(2*c^5*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12
 - 21*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 -
35*c^17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)))*1i)/c^
5))/c^5 + (a^3*((tan(e/2 + (f*x)/2)*(64*a^6*c^18 + 128*a^6*d^18 + 16*b^6*c^
18 - 128*a^6*c*d^17 - 128*a^6*c^17*d + 192*a^2*b^4*c^18 + 576*a^4*b^2*c^18
 - 1024*a^6*c^2*d^16 + 1024*a^6*c^3*d^15 + 3584*a^6*c^4*d^14 - 3584*a^6*c^5*
d^13 - 6968*a^6*c^6*d^12 + 7168*a^6*c^7*d^11 + 8385*a^6*c^8*d^10 - 8960*a^6
*c^9*d^9 - 7024*a^6*c^10*d^8 + 7168*a^6*c^11*d^7 + 4848*a^6*c^12*d^6 - 3584
*a^6*c^13*d^5 - 1920*a^6*c^14*d^4 + 1024*a^6*c^15*d^3 + 1152*a^6*c^16*d^2 +
 16*b^6*c^10*d^8 + 216*b^6*c^12*d^6 + 761*b^6*c^14*d^4 + 216*b^6*c^16*d^2 -
 360*a*b^5*c^11*d^7 - 2910*a*b^5*c^13*d^5 - 3600*a*b^5*c^15*d^3 - 3200*a^3*
b^3*c^17*d - 144*a^5*b*c^5*d^13 - 504*a^5*b*c^7*d^11 + 3666*a^5*b*c^9*d^9 -
 6624*a^5*b*c^11*d^7 + 2016*a^5*b*c^13*d^5 - 3840*a^5*b*c^15*d^3 + 72*a^2*b
^4*c^10*d^8 + 3087*a^2*b^4*c^12*d^6 + 9552*a^2*b^4*c^14*d^4 + 5472*a^2*b^4*
c^16*d^2 - 64*a^3*b^3*c^5*d^13 - 144*a^3*b^3*c^7*d^11 + 1376*a^3*b^3*c^9*d^
9 - 3604*a^3*b^3*c^11*d^7 - 6224*a^3*b^3*c^13*d^5 - 12640*a^3*b^3*c^15*d^3
 + 720*a^4*b^2*c^6*d^12 - 2280*a^4*b^2*c^8*d^10 + 1431*a^4*b^2*c^10*d^8 + 52
56*a^4*b^2*c^12*d^6 + 4416*a^4*b^2*c^14*d^4 + 8256*a^4*b^2*c^16*d^2 - 480*a
*b^5*c^17*d - 1920*a^5*b*c^17*d))/(2*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 +
 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35
*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*
d^3 - 7*c^21*d^2)) - (a^3*((32*a^3*c^27 + 16*b^3*c^27 + 96*a^2*b*c^27 - 160
*a^3*c^26*d - 16*b^3*c^26*d - 32*a^3*c^10*d^17 + 16*a^3*c^11*d^16 + 272*a^3
*c^12*d^15 - 132*a^3*c^13*d^14 - 1020*a^3*c^14*d^13 + 528*a^3*c^15*d^12 + 2
160*a^3*c^16*d^11 - 1112*a^3*c^17*d^10 - 2920*a^3*c^18*d^9 + 1280*a^3*c^19*
d^8 + 2752*a^3*c^20*d^7 - 836*a^3*c^21*d^6 - 1852*a^3*c^22*d^5 + 352*a^3*c^
23*d^4 + 800*a^3*c^24*d^3 - 128*a^3*c^25*d^2 - 16*b^3*c^14*d^13 + 16*b^3*c^
15*d^12 - 44*b^3*c^16*d^11 + 44*b^3*c^17*d^10 + 320*b^3*c^18*d^9 - 320*b^3*
c^19*d^8 - 520*b^3*c^20*d^7 + 520*b^3*c^21*d^6 + 320*b^3*c^22*d^5 - 320*b^3
*c^23*d^4 - 44*b^3*c^24*d^3 + 44*b^3*c^25*d^2 + 180*a*b^2*c^15*d^12 - 180*a
*b^2*c^16*d^11 - 480*a*b^2*c^17*d^10 + 480*a*b^2*c^18*d^9 + 120*a*b^2*c^19*
d^8 - 120*a*b^2*c^20*d^7 + 720*a*b^2*c^21*d^6 - 720*a*b^2*c^22*d^5 - 780*a*
b^2*c^23*d^4 + 780*a*b^2*c^24*d^3 + 240*a*b^2*c^25*d^2 - 36*a^2*b*c^14*d^13
 + 36*a^2*b*c^15*d^12 - 144*a^2*b*c^16*d^11 + 144*a^2*b*c^17*d^10 + 840*a^2
*b*c^18*d^9 - 840*a^2*b*c^19*d^8 - 1200*a^2*b*c^20*d^7 + 1200*a^2*b*c^21*d^
6 + 540*a^2*b*c^22*d^5 - 540*a^2*b*c^23*d^4 + 96*a^2*b*c^24*d^3 - 96*a^2*b*
c^25*d^2 - 240*a*b^2*c^26*d - 96*a^2*b*c^26*d)/(c^26*d + c^27 - c^12*d^15 -
 c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^16*d^11 - 21*c^17*d^10 + 35*c
^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d^6 + 21*c^22*d^5 + 21*c^23*d
^4 - 7*c^24*d^3 - 7*c^25*d^2) + (a^3*tan(e/2 + (f*x)/2)*(128*c^27*d - 128*c
^10*d^18 + 128*c^11*d^17 + 1024*c^12*d^16 - 1024*c^13*d^15 - 3584*c^14*d^14
 + 3584*c^15*d^13 + 7168*c^16*d^12 - 7168*c^17*d^11 - 8960*c^18*d^10 + 8960
*c^19*d^9 + 7168*c^20*d^8 - 7168*c^21*d^7 - 3584*c^22*d^6 + 3584*c^23*d^5 +
 1024*c^24*d^4 - 1024*c^25*d^3 - 128*c^26*d^2)*1i)/(2*c^5*(c^22*d + c^23 -
c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^
10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 +
21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)))*1i)/c^5))/c^5)/((64*a^9*d^17 - 192
*a^8*b*c^17 - 32*a^9*c*d^16 + 320*a^9*c^16*d + 16*a^3*b^6*c^17 + 192*a^5*b^
4*c^17 - 32*a^6*b^3*c^17 + 576*a^7*b^2*c^17 - 544*a^9*c^2*d^15 + 264*a^9*c^
3*d^14 + 2040*a^9*c^4*d^13 - 856*a^9*c^5*d^12 - 4320*a^9*c^6*d^11 + 1649*a^
9*c^7*d^10 + 5840*a^9*c^8*d^9 - 2416*a^9*c^9*d^8 - 5504*a^9*c^10*d^7 + 2936

*a^9*c^11*d^6 + 3704*a^9*c^12*d^5 - 1600*a^9*c^13*d^4 - 1600*a^9*c^14*d^3 + 1280*a^9*c^15*d^2 - 480*a^4*b^5*c^16*d - 3168*a^6*b^3*c^16*d + 480*a^7*b^2*c^16*d - 72*a^8*b*c^4*d^13 - 72*a^8*b*c^5*d^12 - 216*a^8*b*c^6*d^11 - 288*a^8*b*c^7*d^10 + 1986*a^8*b*c^8*d^9 + 1680*a^8*b*c^9*d^8 - 4224*a^8*b*c^10*d^7 - 2400*a^8*b*c^11*d^6 + 936*a^8*b*c^12*d^5 + 1080*a^8*b*c^13*d^4 - 4032*a^8*b*c^14*d^3 + 192*a^8*b*c^15*d^2 + 16*a^3*b^6*c^9*d^8 + 216*a^3*b^6*c^11*d^6 + 761*a^3*b^6*c^13*d^4 + 216*a^3*b^6*c^15*d^2 - 360*a^4*b^5*c^10*d^7 - 2910*a^4*b^5*c^12*d^5 - 3600*a^4*b^5*c^14*d^3 + 72*a^5*b^4*c^9*d^8 + 3087*a^5*b^4*c^11*d^6 + 9552*a^5*b^4*c^13*d^4 + 5472*a^5*b^4*c^15*d^2 - 32*a^6*b^3*c^4*d^13 - 32*a^6*b^3*c^5*d^12 - 56*a^6*b^3*c^6*d^11 - 88*a^6*b^3*c^7*d^10 + 736*a^6*b^3*c^8*d^9 + 640*a^6*b^3*c^9*d^8 - 2564*a^6*b^3*c^10*d^7 - 1040*a^6*b^3*c^11*d^6 - 6864*a^6*b^3*c^12*d^5 + 640*a^6*b^3*c^13*d^4 - 12552*a^6*b^3*c^14*d^3 - 88*a^6*b^3*c^15*d^2 + 360*a^7*b^2*c^5*d^12 + 360*a^7*b^2*c^6*d^11 - 1320*a^7*b^2*c^7*d^10 - 960*a^7*b^2*c^8*d^9 + 1191*a^7*b^2*c^9*d^8 + 240*a^7*b^2*c^10*d^7 + 3816*a^7*b^2*c^11*d^6 + 1440*a^7*b^2*c^12*d^5 + 5976*a^7*b^2*c^13*d^4 - 1560*a^7*b^2*c^14*d^3 + 7776*a^7*b^2*c^15*d^2 - 1728*a^8*b*c^16*d)/(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^16*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d^6 + 21*c^22*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) - (a^3*((tan(e/2 + (f*x)/2)*(64*a^6*c^18 + 128*a^6*d^18 + 16*b^6*c^18 - 128*a^6*c*d^17 - 128*a^6*c^17*d + 192*a^2*b^4*c^18 + 576*a^4*b^2*c^18 - 1024*a^6*c^2*d^16 + 1024*a^6*c^3*d^15 + 3584*a^6*c^4*d^14 - 3584*a^6*c^5*d^13 - 6968*a^6*c^6*d^12 + 7168*a^6*c^7*d^11 + 8385*a^6*c^8*d^10 - 8960*a^6*c^9*d^9 - 7024*a^6*c^10*d^8 + 7168*a^6*c^11*d^7 + 4848*a^6*c^12*d^6 - 3584*a^6*c^13*d^5 - 1920*a^6*c^14*d^4 + 1024*a^6*c^15*d^3 + 1152*a^6*c^16*d^2 + 16*b^6*c^10*d^8 + 216*b^6*c^12*d^6 + 761*b^6*c^14*d^4 + 216*b^6*c^16*d^2 - 360*a*b^5*c^11*d^7 - 2910*a*b^5*c^13*d^5 - 3600*a*b^5*c^15*d^3 - 3200*a^3*b^3*c^17*d - 144*a^5*b*c^5*d^13 - 504*a^5*b*c^7*d^11 + 3666*a^5*b*c^9*d^9 - 6624*a^5*b*c^11*d^7 + 2016*a^5*b*c^13*d^5 - 3840*a^5*b*c^15*d^3 + 72*a^2*b^4*c^10*d^8 + 3087*a^2*b^4*c^12*d^6 + 9552*a^2*b^4*c^14*d^4 + 5472*a^2*b^4*c^16*d^2 - 64*a^3*b^3*c^5*d^13 - 144*a^3*b^3*c^7*d^11 + 1376*a^3*b^3*c^9*d^9 - 3604*a^3*b^3*c^11*d^7 - 6224*a^3*b^3*c^13*d^5 - 12640*a^3*b^3*c^15*d^3 + 720*a^4*b^2*c^6*d^12 - 2280*a^4*b^2*c^8*d^10 + 1431*a^4*b^2*c^10*d^8 + 5256*a^4*b^2*c^12*d^6 + 4416*a^4*b^2*c^14*d^4 + 8256*a^4*b^2*c^16*d^2 - 480*a*b^5*c^17*d - 1920*a^5*b*c^17*d))/(2*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)) + (a^3*((32*a^3*c^27 + 16*b^3*c^27 + 96*a^2*b*c^27 - 160*a^3*c^26*d - 16*b^3*c^26*d - 32*a^3*c^10*d^17 + 16*a^3*c^11*d^16 + 272*a^3*c^12*d^15 - 132*a^3*c^13*d^14 - 1020*a^3*c^14*d^13 + 528*a^3*c^15*d^12 + 2160*a^3*c^16*d^11 - 1112*a^3*c^17*d^10 - 2920*a^3*c^18*d^9 + 1280*a^3*c^19*d^8 + 2752*a^3*c^20*d^7 - 836*a^3*c^21*d^6 - 1852*a^3*c^22*d^5 + 352*a^3*c^23*d^4 + 800*a^3*c^24*d^3 - 128*a^3*c^25*d^2 - 16*b^3*c^14*d^13 + 16*b^3*c^15*d^12 - 44*b^3*c^16*d^11 + 44*b^3*c^17*d^10 + 320*b^3*c^18*d^9 - 320*b^3*c^19*d^8 - 520*b^3*c^20*d^7 + 520*b^3*c^21*d^6 + 320*b^3*c^22*d^5 - 320*b^3*c^23*d^4 - 44*b^3*c^24*d^3 + 44*b^3*c^25*d^2 + 180*a*b^2*c^15*d^12 - 180*a*b^2*c^16*d^11 - 480*a*b^2*c^17*d^10 + 480*a*b^2*c^18*d^9 + 120*a*b^2*c^19*d^8 - 120*a*b^2*c^20*d^7 + 720*a*b^2*c^21*d^6 - 720*a*b^2*c^22*d^5 - 780*a*b^2*c^23*d^4 + 780*a*b^2*c^24*d^3 + 240*a*b^2*c^25*d^2 - 36*a^2*b*c^14*d^13 + 36*a^2*b*c^15*d^12 - 144*a^2*b*c^16*d^11 + 144*a^2*b*c^17*d^10 + 840*a^2*b*c^18*d^9 - 840*a^2*b*c^19*d^8 - 1200*a^2*b*c^20*d^7 + 1200*a^2*b*c^21*d^6 + 540*a^2*b*c^22*d^5 - 540*a^2*b*c^23*d^4 + 96*a^2*b*c^24*d^3 - 96*a^2*b*c^25*d^2 - 240*a*b^2*c^26*d - 96*a^2*b*c^26*d)/(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^15*d^12 - 21*c^16*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20*d^7 - 35*c^21*d^6 + 21*c^22*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) - (a^3*tan(e/2 + (f*x)/2)*(128*c^27*d - 128*c^10*d^18 + 128*c^11*d^17 + 1024*c^12*d^16 - 1024*c^13*d^15 - 3584*c^14*d^14 + 3584*c^15*d^13 + 7168*c^16*d^12 - 7168*c^17*d^11 - 8960*c^18*d^10 + 8960*c^19*d^9 + 7168*c^20*d^8 - 7168*c^21*d^7 - 3584*c^22*d^6 + 3584*c^23*d^5 + 1024*

c^24*d^4 - 1024*c^25*d^3 - 128*c^26*d^2)*1i)/(2*c^5*(c^22*d + c^23 - c^8*d^
15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10 + 3
5*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21*c^1
9*d^4 - 7*c^20*d^3 - 7*c^21*d^2)))*1i)/c^5)*1i)/c^5 + (a^3*((tan(e/2 + (f*x
)/2)*(64*a^6*c^18 + 128*a^6*d^18 + 16*b^6*c^18 - 128*a^6*c*d^17 - 128*a^6*c
^17*d + 192*a^2*b^4*c^18 + 576*a^4*b^2*c^18 - 1024*a^6*c^2*d^16 + 1024*a^6*
c^3*d^15 + 3584*a^6*c^4*d^14 - 3584*a^6*c^5*d^13 - 6968*a^6*c^6*d^12 + 7168
*a^6*c^7*d^11 + 8385*a^6*c^8*d^10 - 8960*a^6*c^9*d^9 - 7024*a^6*c^10*d^8 +
7168*a^6*c^11*d^7 + 4848*a^6*c^12*d^6 - 3584*a^6*c^13*d^5 - 1920*a^6*c^14*d
^4 + 1024*a^6*c^15*d^3 + 1152*a^6*c^16*d^2 + 16*b^6*c^10*d^8 + 216*b^6*c^12
*d^6 + 761*b^6*c^14*d^4 + 216*b^6*c^16*d^2 - 360*a*b^5*c^11*d^7 - 2910*a*b^
5*c^13*d^5 - 3600*a*b^5*c^15*d^3 - 3200*a^3*b^3*c^17*d - 144*a^5*b*c^5*d^13
 - 504*a^5*b*c^7*d^11 + 3666*a^5*b*c^9*d^9 - 6624*a^5*b*c^11*d^7 + 2016*a^5
*b*c^13*d^5 - 3840*a^5*b*c^15*d^3 + 72*a^2*b^4*c^10*d^8 + 3087*a^2*b^4*c^12
*d^6 + 9552*a^2*b^4*c^14*d^4 + 5472*a^2*b^4*c^16*d^2 - 64*a^3*b^3*c^5*d^13
- 144*a^3*b^3*c^7*d^11 + 1376*a^3*b^3*c^9*d^9 - 3604*a^3*b^3*c^11*d^7 - 622
4*a^3*b^3*c^13*d^5 - 12640*a^3*b^3*c^15*d^3 + 720*a^4*b^2*c^6*d^12 - 2280*a
^4*b^2*c^8*d^10 + 1431*a^4*b^2*c^10*d^8 + 5256*a^4*b^2*c^12*d^6 + 4416*a^4*
b^2*c^14*d^4 + 8256*a^4*b^2*c^16*d^2 - 480*a*b^5*c^17*d - 1920*a^5*b*c^17*d
))/(2*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^13 + 7*c^11*d^12 - 21
*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8 - 35*c^16*d^7 - 35*c^
17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^21*d^2)) - (a^3*((32*
a^3*c^27 + 16*b^3*c^27 + 96*a^2*b*c^27 - 160*a^3*c^26*d - 16*b^3*c^26*d - 3
2*a^3*c^10*d^17 + 16*a^3*c^11*d^16 + 272*a^3*c^12*d^15 - 132*a^3*c^13*d^14
- 1020*a^3*c^14*d^13 + 528*a^3*c^15*d^12 + 2160*a^3*c^16*d^11 - 1112*a^3*c^
17*d^10 - 2920*a^3*c^18*d^9 + 1280*a^3*c^19*d^8 + 2752*a^3*c^20*d^7 - 836*a
^3*c^21*d^6 - 1852*a^3*c^22*d^5 + 352*a^3*c^23*d^4 + 800*a^3*c^24*d^3 - 128
*a^3*c^25*d^2 - 16*b^3*c^14*d^13 + 16*b^3*c^15*d^12 - 44*b^3*c^16*d^11 + 44
*b^3*c^17*d^10 + 320*b^3*c^18*d^9 - 320*b^3*c^19*d^8 - 520*b^3*c^20*d^7 + 5
20*b^3*c^21*d^6 + 320*b^3*c^22*d^5 - 320*b^3*c^23*d^4 - 44*b^3*c^24*d^3 + 4
4*b^3*c^25*d^2 + 180*a*b^2*c^15*d^12 - 180*a*b^2*c^16*d^11 - 480*a*b^2*c^17
*d^10 + 480*a*b^2*c^18*d^9 + 120*a*b^2*c^19*d^8 - 120*a*b^2*c^20*d^7 + 720*
a*b^2*c^21*d^6 - 720*a*b^2*c^22*d^5 - 780*a*b^2*c^23*d^4 + 780*a*b^2*c^24*d
^3 + 240*a*b^2*c^25*d^2 - 36*a^2*b*c^14*d^13 + 36*a^2*b*c^15*d^12 - 144*a^2
*b*c^16*d^11 + 144*a^2*b*c^17*d^10 + 840*a^2*b*c^18*d^9 - 840*a^2*b*c^19*d^
8 - 1200*a^2*b*c^20*d^7 + 1200*a^2*b*c^21*d^6 + 540*a^2*b*c^22*d^5 - 540*a^
2*b*c^23*d^4 + 96*a^2*b*c^24*d^3 - 96*a^2*b*c^25*d^2 - 240*a*b^2*c^26*d - 9
6*a^2*b*c^26*d)/(c^26*d + c^27 - c^12*d^15 - c^13*d^14 + 7*c^14*d^13 + 7*c^
15*d^12 - 21*c^16*d^11 - 21*c^17*d^10 + 35*c^18*d^9 + 35*c^19*d^8 - 35*c^20
*d^7 - 35*c^21*d^6 + 21*c^22*d^5 + 21*c^23*d^4 - 7*c^24*d^3 - 7*c^25*d^2) +
 (a^3*tan(e/2 + (f*x)/2)*(128*c^27*d - 128*c^10*d^18 + 128*c^11*d^17 + 1024
*c^12*d^16 - 1024*c^13*d^15 - 3584*c^14*d^14 + 3584*c^15*d^13 + 7168*c^16*d
^12 - 7168*c^17*d^11 - 8960*c^18*d^10 + 8960*c^19*d^9 + 7168*c^20*d^8 - 716
8*c^21*d^7 - 3584*c^22*d^6 + 3584*c^23*d^5 + 1024*c^24*d^4 - 1024*c^25*d^3
- 128*c^26*d^2)*1i)/(2*c^5*(c^22*d + c^23 - c^8*d^15 - c^9*d^14 + 7*c^10*d^
13 + 7*c^11*d^12 - 21*c^12*d^11 - 21*c^13*d^10 + 35*c^14*d^9 + 35*c^15*d^8
- 35*c^16*d^7 - 35*c^17*d^6 + 21*c^18*d^5 + 21*c^19*d^4 - 7*c^20*d^3 - 7*c^
21*d^2)))*1i)/c^5)*1i)/c^5)))/(c^5*f) - ((tan(e/2 + (f*x)/2)^7*(8*a^3*d^8 +
 4*b^3*c^8 - 24*a*b^2*c^8 - 4*a^3*c*d^7 + 32*b^3*c^7*d - 32*a^3*c^2*d^6 + 1
5*a^3*c^3*d^5 + 40*a^3*c^4*d^4 - 40*a^3*c^5*d^3 - 80*a^3*c^6*d^2 + 4*b^3*c^
4*d^4 + 32*b^3*c^5*d^3 + 21*b^3*c^6*d^2 - 24*a*b^2*c^4*d^4 - 51*a*b^2*c^5*d
^3 - 144*a*b^2*c^6*d^2 + 15*a^2*b*c^4*d^4 + 96*a^2*b*c^5*d^3 + 72*a^2*b*c^6
*d^2 - 36*a*b^2*c^7*d + 96*a^2*b*c^7*d))/(4*(c^4*d - c^5)*(c + d)^4) - (tan
(e/2 + (f*x)/2)*(4*b^3*c^8 - 8*a^3*d^8 + 24*a*b^2*c^8 - 4*a^3*c*d^7 - 32*b^
3*c^7*d + 32*a^3*c^2*d^6 + 15*a^3*c^3*d^5 - 40*a^3*c^4*d^4 - 40*a^3*c^5*d^3
 + 80*a^3*c^6*d^2 + 4*b^3*c^4*d^4 - 32*b^3*c^5*d^3 + 21*b^3*c^6*d^2 + 24*a*
b^2*c^4*d^4 - 51*a*b^2*c^5*d^3 + 144*a*b^2*c^6*d^2 + 15*a^2*b*c^4*d^4 - 96*
a^2*b*c^5*d^3 + 72*a^2*b*c^6*d^2 - 36*a*b^2*c^7*d - 96*a^2*b*c^7*d))/(4*(c
+ d)*(c^8 - 4*c^7*d + c^4*d^4 - 4*c^5*d^3 + 6*c^6*d^2)) + (tan(e/2 + (f*x)/

```
2)^5*(72*a^3*d^8 + 12*b^3*c^8 - 216*a*b^2*c^8 - 12*a^3*c*d^7 + 224*b^3*c^7*
d - 320*a^3*c^2*d^6 + 69*a^3*c^3*d^5 + 520*a^3*c^4*d^4 - 120*a^3*c^5*d^3 -
720*a^3*c^6*d^2 + 12*b^3*c^4*d^4 + 224*b^3*c^5*d^3 + 39*b^3*c^6*d^2 - 120*a
*b^2*c^4*d^4 - 81*a*b^2*c^5*d^3 - 1008*a*b^2*c^6*d^2 - 27*a^2*b*c^4*d^4 + 4
80*a^2*b*c^5*d^3 + 216*a^2*b*c^6*d^2 - 108*a*b^2*c^7*d + 864*a^2*b*c^7*d))/
(12*(c + d)^3*(c^6 - 2*c^5*d + c^4*d^2)) + (tan(e/2 + (f*x)/2)^3*(72*a^3*d^
8 - 12*b^3*c^8 - 216*a*b^2*c^8 + 12*a^3*c*d^7 + 224*b^3*c^7*d - 320*a^3*c^2
*d^6 - 69*a^3*c^3*d^5 + 520*a^3*c^4*d^4 + 120*a^3*c^5*d^3 - 720*a^3*c^6*d^2
 - 12*b^3*c^4*d^4 + 224*b^3*c^5*d^3 - 39*b^3*c^6*d^2 - 120*a*b^2*c^4*d^4 +
81*a*b^2*c^5*d^3 - 1008*a*b^2*c^6*d^2 + 27*a^2*b*c^4*d^4 + 480*a^2*b*c^5*d^
3 - 216*a^2*b*c^6*d^2 + 108*a*b^2*c^7*d + 864*a^2*b*c^7*d))/(12*(c + d)^2*(
3*c^6*d - c^7 + c^4*d^3 - 3*c^5*d^2)))/(f*(tan(e/2 + (f*x)/2)^4*(6*c^4 + 6*
d^4 - 12*c^2*d^2) + tan(e/2 + (f*x)/2)^2*(8*c*d^3 - 8*c^3*d - 4*c^4 + 4*d^4
) - tan(e/2 + (f*x)/2)^6*(8*c*d^3 - 8*c^3*d + 4*c^4 - 4*d^4) + tan(e/2 + (f
*x)/2)^8*(c^4 - 4*c^3*d - 4*c*d^3 + d^4 + 6*c^2*d^2) + 4*c*d^3 + 4*c^3*d +
c^4 + d^4 + 6*c^2*d^2))
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^3}{\left(c+d\sec\left(e+fx\right)\right)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**3/(c+d*sec(f*x+e))**5,x)
```

```
[Out] Integral((a + b*sec(e + f*x))**3/(c + d*sec(e + f*x))**5, x)
```

3.198 $\int \sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))\,dx$

Optimal. Leaf size=320

$$\frac{2\sqrt{a+b}\,(ad+b(c-d))\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)}{bf}-\frac{2c\sqrt{a+b}\,\mathrm{co}}{}$$

```
[Out] -2*(a-b)*d*cot(f*x+e)*EllipticE((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),((a+b)/(
a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/
(a-b))^(1/2)/b/f+2*(b*(c-d)+a*d)*cot(f*x+e)*EllipticF((a+b*sec(f*x+e))^(1/2
)/(a+b)^(1/2),((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/
2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/b/f-2*c*cot(f*x+e)*EllipticPi((a+b*sec(f
*x+e))^(1/2)/(a+b)^(1/2),(a+b)/a,((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec
(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/f
```

Rubi [A] time = 0.28, antiderivative size = 320, 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 = {3916, 3784, 4005, 3832, 4004}

$$\frac{2\sqrt{a+b}\,(ad+b(c-d))\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)}{bf}-\frac{2c\sqrt{a+b}\,\mathrm{co}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*x]),x]
```

```
[Out] (-2*(a - b)*Sqrt[a + b]*d*Cot[e + f*x]*EllipticE[ArcSin[Sqrt[a + b*Sec[e +
f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*S
qrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(b*f) + (2*Sqrt[a + b]*(b*(c - d) +
 a*d)*Cot[e + f*x]*EllipticF[ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]],
(a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e
+ f*x]))/(a - b))])/(b*f) - (2*Sqrt[a + b]*c*Cot[e + f*x]*EllipticPi[(a + b
)/a, ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b
*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/f
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3916

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_)), x_Symbol] :> Dist[a*c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] +
 Int[(Csc[e + f*x]*(b*c + a*d + b*d*Csc[e + f*x]))/Sqrt[a + b*Csc[e + f*x]]
, x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2,
 0]
```

Rule 4004

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/Sqrt[c
sc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(-2*(A*b - a*B)*Rt[
a + (b*B)/A, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[e +
 f*x]))/(a - b))]*EllipticE[ArcSin[Sqrt[a + b*Csc[e + f*x]]/Rt[a + (b*B)/A,
 2]], (a*A + b*B)/(a*A - b*B)])/(b^2*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f, A, B}, x] && NeQ[a^2 - b^2, 0] && EqQ[A^2 - B^2, 0]
```

Rule 4005

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/Sqrt[c
sc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Dist[A - B, Int[Csc[e +
f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] + Dist[B, Int[(Csc[e + f*x]*(1 + Csc[
e + f*x]))/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, e, f, A, B}, x]
 && NeQ[a^2 - b^2, 0] && NeQ[A^2 - B^2, 0]
```

Rubi steps

$$\int \sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))\,dx = (ac)\int \frac{1}{\sqrt{a+b\sec(e+fx)}}\,dx + \int \frac{\sec(e+fx)(bc+ad+bd\sec(e$$

$$= -\frac{2\sqrt{a+b}\,c\cot(e+fx)\Pi\left(\frac{a+b}{a};\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec}{a-}}}{f}$$

$$= -\frac{2(a-b)\sqrt{a+b}\,d\cot(e+fx)E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-}{}}}{bf}$$

Mathematica [C] time = 17.94, size = 913, normalized size = 2.85

$$\frac{2d\cos(e+fx)\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))\sin(e+fx)}{f(d+c\cos(e+fx))}+\frac{2\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))\left(a\sqrt{\frac{b-}{a+}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*d*Cos[e + f*x]*Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*x])*Sin[e + f*x
])/(f*(d + c*Cos[e + f*x])) + (2*Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*
x])*(a*Sqrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/2] + b*Sqrt[(-a + b)/(a + b)]
*d*Tan[(e + f*x)/2] - 2*a*Sqrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/2]^3 + a*S
qrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/2]^5 - b*Sqrt[(-a + b)/(a + b)]*d*Tan
[(e + f*x)/2]^5 + (2*I)*a*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(
-a + b)/(a + b)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)
/2]^2]*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)]
+ (2*I)*a*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a + b)]
*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Tan[(e + f*x)/2]^2*Sqrt[1 - Tan[(e + f
*x)/2]^2]*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b
)] - I*(a - b)*d*EllipticE[I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2
]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*(1 + Tan[(e + f*x)/2]^2)*
Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] - I*(a
- b)*(c - d)*EllipticF[I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]],
```

```
(a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*(1 + Tan[(e + f*x)/2]^2)*Sqrt
[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)]))/(Sqrt[(-a
 + b)/(a + b)]*f*Sqrt[b + a*Cos[e + f*x]]*(d + c*Cos[e + f*x])*Sec[e + f*x]
^(3/2)*Sqrt[(1 - Tan[(e + f*x)/2]^2)^(-1)]*(-1 + Tan[(e + f*x)/2]^2)*(1 + T
an[(e + f*x)/2]^2)^(3/2)*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*
x)/2]^2)/(1 + Tan[(e + f*x)/2]^2)])
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{b\sec\left(fx+e\right)+a}\left(d\sec\left(fx+e\right)+c\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))*(a+b*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c), x)
```

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

$$\int\sqrt{b\sec\left(fx+e\right)+a}\left(d\sec\left(fx+e\right)+c\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))*(a+b*sec(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c), x)
```

maple [B] time = 1.94, size = 1372, normalized size = 4.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))*(a+b*sec(f*x+e))^(1/2),x)
```

```
[Out] 2/f*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*(1+cos(f*x+e))^2*(-1+cos(f*x+e))^2*
(cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+
e))/(a+b))^(1/2)*sin(f*x+e)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+
b))^(1/2))*a*c-cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e
))/(1+cos(f*x+e))/(a+b))^(1/2)*sin(f*x+e)*EllipticF((-1+cos(f*x+e))/sin(f*x
+e),((a-b)/(a+b))^(1/2))*a*d-cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*(
(b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*sin(f*x+e)*EllipticF((-1+cos(f
*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*b*c-cos(f*x+e)*(cos(f*x+e)/(1+cos(f*
x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*sin(f*x+e)*Ellip
ticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*b*d+cos(f*x+e)*(cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*si
n(f*x+e)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*d+cos(
f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(
a+b))^(1/2)*sin(f*x+e)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(
1/2))*b*d-2*cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/
(1+cos(f*x+e))/(a+b))^(1/2)*sin(f*x+e)*EllipticPi((-1+cos(f*x+e))/sin(f*x+e
),-1,((a-b)/(a+b))^(1/2))*a*c+(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f
*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*sin(f*x+e)*EllipticF((-1+cos(f*x+e))/sin
(f*x+e),((a-b)/(a+b))^(1/2))*a*c-(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*co
s(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),
((a-b)/(a+b))^(1/2))*a*d*sin(f*x+e)-(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a
*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+
e),((a-b)/(a+b))^(1/2))*b*c*sin(f*x+e)-(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((
b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f
*x+e),((a-b)/(a+b))^(1/2))*b*d*sin(f*x+e)+(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/si
```

```
n(f*x+e),((a-b)/(a+b))^(1/2))*a*d*sin(f*x+e)+(cos(f*x+e)/(1+cos(f*x+e)))^(1
/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))
/sin(f*x+e),((a-b)/(a+b))^(1/2))*b*d*sin(f*x+e)-2*(cos(f*x+e)/(1+cos(f*x+e)
))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticPi((-1+cos(f
*x+e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*a*c*sin(f*x+e)-cos(f*x+e)^2*a*d+c
os(f*x+e)*a*d-cos(f*x+e)*b*d+b*d)/sin(f*x+e)^5/(b+a*cos(f*x+e))
```

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

$$\int \sqrt{b\sec\left(fx+e\right)+a}\left(d\sec\left(fx+e\right)+c\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))*(a+b*sec(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c), x)
```

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

$$\int \sqrt{a+\frac{b}{\cos\left(e+fx\right)}}\left(c+\frac{d}{\cos\left(e+fx\right)}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x)),x)
[Out] int((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x)), x)
```

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

$$\int \sqrt{a+b\sec\left(e+fx\right)}\left(c+d\sec\left(e+fx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))*(a+b*sec(f*x+e))**(1/2),x)
[Out] Integral(sqrt(a + b*sec(e + f*x))*(c + d*sec(e + f*x)), x)
```

3.199 $\int \frac{\sqrt{a+b\sec(e+fx)}}{c+d\sec(e+fx)}\,dx$

Optimal. Leaf size=220

$$\frac{2(bc-ad)\tan(e+fx)\sqrt{\frac{a+b\sec(e+fx)}{a+b}}\,\Pi\left(\frac{2d}{c+d};\sin^{-1}\left(\frac{\sqrt{1-\sec(e+fx)}}{\sqrt{2}}\right)|\frac{2b}{a+b}\right)}{cf(c+d)\sqrt{-\tan^2(e+fx)}\,\sqrt{a+b\sec(e+fx)}}-\frac{2\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\,\sqrt{-}}{}$$

```
[Out] -2*cot(f*x+e)*EllipticPi((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),(a+b)/a,((a+b)/
(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))
/(a-b))^(1/2)/c/f+2*(-a*d+b*c)*EllipticPi(1/2*(1-sec(f*x+e))^(1/2)*2^(1/2),
2*d/(c+d),2^(1/2)*(b/(a+b))^(1/2))*((a+b*sec(f*x+e))/(a+b))^(1/2)*tan(f*x+e
)/c/(c+d)/f/(a+b*sec(f*x+e))^(1/2)/(-tan(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3926, 3784, 3973}

$$\frac{2(bc-ad)\tan(e+fx)\sqrt{\frac{a+b\sec(e+fx)}{a+b}}\,\Pi\left(\frac{2d}{c+d};\sin^{-1}\left(\frac{\sqrt{1-\sec(e+fx)}}{\sqrt{2}}\right)|\frac{2b}{a+b}\right)}{cf(c+d)\sqrt{-\tan^2(e+fx)}\,\sqrt{a+b\sec(e+fx)}}-\frac{2\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\,\sqrt{-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Sec[e + f*x]]/(c + d*Sec[e + f*x]),x]
```

```
[Out] (-2*Sqrt[a + b]*Cot[e + f*x]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Sec[e
+ f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]
*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(c*f) + (2*(b*c - a*d)*EllipticPi
[(2*d)/(c + d), ArcSin[Sqrt[1 - Sec[e + f*x]]/Sqrt[2]], (2*b)/(a + b)]*Sqrt
[(a + b*Sec[e + f*x])/(a + b)]*Tan[e + f*x])/(c*(c + d)*f*Sqrt[a + b*Sec[e
+ f*x]]*Sqrt[-Tan[e + f*x]^2])
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3926

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_)), x_Symbol] :> Dist[a/c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] +
 Dist[(b*c - a*d)/c, Int[Csc[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*(c + d*Csc[
e + f*x])), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3973

```
Int[csc[(e_.) + (f_.)*(x_)]/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(cs
c[(e_.) + (f_.)*(x_)]*(d_.) + (c_))), x_Symbol] :> Simp[(-2*Cot[e + f*x]*Sq
rt[(a + b*Csc[e + f*x])/(a + b)]*EllipticPi[(2*d)/(c + d), ArcSin[Sqrt[1 -
Csc[e + f*x]]/Sqrt[2]], (2*b)/(a + b)])/(f*(c + d)*Sqrt[a + b*Csc[e + f*x]]
*Sqrt[-Cot[e + f*x]^2]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{\sqrt{a+b\sec(e+fx)}}{c+d\sec(e+fx)}\,dx = \frac{a\int \frac{1}{\sqrt{a+b\sec(e+fx)}}\,dx}{c} + \frac{(bc-ad)\int \frac{\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))}\,dx}{c}$$
$$= -\frac{2\sqrt{a+b}\,\cot(e+fx)\Pi\left(\frac{a+b}{a};\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(1+\sec(e+}{a-b}}}{cf}$$

Mathematica [A] time = 4.59, size = 225, normalized size = 1.02

$$\frac{4\cos^2\left(\frac{1}{2}(e+fx)\right)\sqrt{\frac{\cos(e+fx)}{\cos(e+fx)+1}}\sqrt{\frac{a\cos(e+fx)+b}{(a+b)(\cos(e+fx)+1)}}\sqrt{a+b\sec(e+fx)}\left(2a\left(c^2-d^2\right)\Pi\left(-1;\sin^{-1}\left(\tan\left(\frac{1}{2}(e+fx)\right)\right.\right.\right.}{cf(c-d)(c+d)(a}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Sec[e + f*x]]/(c + d*Sec[e + f*x]),x]
```

```
[Out] (4*Cos[(e + f*x)/2]^2*Sqrt[Cos[e + f*x]/(1 + Cos[e + f*x])]*Sqrt[(b + a*Cos
[e + f*x])/((a + b)*(1 + Cos[e + f*x]))]*(-((a - b)*c*(c + d)*EllipticF[Arc
Sin[Tan[(e + f*x)/2]], (a - b)/(a + b)]) + 2*a*(c^2 - d^2)*EllipticPi[-1, A
rcSin[Tan[(e + f*x)/2]], (a - b)/(a + b)] + 2*d*(-(b*c) + a*d)*EllipticPi[(
c - d)/(c + d), ArcSin[Tan[(e + f*x)/2]], (a - b)/(a + b)])*Sqrt[a + b*Sec[
e + f*x]])/(c*(c - d)*(c + d)*f*(b + a*Cos[e + f*x]))
```

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((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{b\sec\left(fx+e\right)+a}}{d\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/(d*sec(f*x + e) + c), x)
```

maple [B] time = 1.69, size = 443, normalized size = 2.01

$$-\frac{2\sqrt{\frac{b+a\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sqrt{\frac{b+a\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)(a+b)}}\left(1+\cos\left(fx+e\right)\right)^2\left(\text{EllipticF}\left(\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)},\sqrt{\frac{a-b}{a+b}}\right)a\,c^2+\text{Elli}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] -2/f*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*(1+cos(f*x+e))^2*(EllipticF((
-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*c^2+EllipticF((-1+cos(f*x+
e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*c*d-EllipticF((-1+cos(f*x+e))/sin(f*x
+e),((a-b)/(a+b))^(1/2))*b*c^2-EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/
(a+b))^(1/2))*b*c*d-2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),(c-d)/(c+d),((a
-b)/(a+b))^(1/2))*a*d^2+2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),(c-d)/(c+d)
,((a-b)/(a+b))^(1/2))*b*c*d-2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((a-
b)/(a+b))^(1/2))*a*c^2+2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((a-b)/(a
+b))^(1/2))*a*d^2)*(-1+cos(f*x+e))/(b+a*cos(f*x+e))/sin(f*x+e)^2/c/(c-d)/(c
+d)
```

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

$$\int \frac{\sqrt{b\sec\left(fx+e\right)+a}}{d\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/(d*sec(f*x + e) + c), x)
```

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

$$\int \frac{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}}{c+\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x)),x)
```

```
[Out] int((a + b/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x)), x)
```

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

$$\int \frac{\sqrt{a+b\sec\left(e+fx\right)}}{c+d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] Integral(sqrt(a + b*sec(e + f*x))/(c + d*sec(e + f*x)), x)
```

3.200 $\int (a+b\sec(e+fx))^{3/2}(c+d\sec(e+fx))\,dx$

Optimal. Leaf size=380

$$\frac{2\sqrt{a+b}\left(3a^2d+ab(6c-4d)-b^2(3c-d)\right)\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+}{a-}\right.}{3bf}$$

```
[Out] -2/3*(a-b)*(4*a*d+3*b*c)*cot(f*x+e)*EllipticE((a+b*sec(f*x+e))^(1/2)/(a+b)^
(1/2),((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(
1+sec(f*x+e))/(a-b))^(1/2)/b/f+2/3*(a*b*(6*c-4*d)-b^2*(3*c-d)+3*a^2*d)*cot(
f*x+e)*EllipticF((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),((a+b)/(a-b))^(1/2))*(a
+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/b/
f-2*a*c*cot(f*x+e)*EllipticPi((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),(a+b)/a,((
a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*
x+e))/(a-b))^(1/2)/f+2/3*b*d*(a+b*sec(f*x+e))^(1/2)*tan(f*x+e)/f
```

Rubi [A] time = 0.43, antiderivative size = 380, 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 = {3918, 4058, 3921, 3784, 3832, 4004}

$$\frac{2\sqrt{a+b}\left(3a^2d+ab(6c-4d)-b^2(3c-d)\right)\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+}{a-}\right.}{3bf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] (-2*(a - b)*Sqrt[a + b]*(3*b*c + 4*a*d)*Cot[e + f*x]*EllipticE[ArcSin[Sqrt[
a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x
]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(3*b*f) + (2*Sqrt[a +
 b]*(a*b*(6*c - 4*d) - b^2*(3*c - d) + 3*a^2*d)*Cot[e + f*x]*EllipticF[ArcS
in[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec
[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(3*b*f) - (2*
a*Sqrt[a + b]*c*Cot[e + f*x]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Sec[e
+ f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]
*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/f + (2*b*d*Sqrt[a + b*Sec[e + f*x
]]*Tan[e + f*x])/(3*f)
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3918

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[(b*d*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m -
 1))/(f*m), x] + Dist[1/m, Int[(a + b*Csc[e + f*x])^(m - 2)*Simp[a^2*c*m +
```

```
(b^2*d*(m - 1) + 2*a*b*c*m + a^2*d*m)*Csc[e + f*x] + b*(b*c*m + a*d*(2*m -
1))*Csc[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && GtQ[m, 1] && NeQ[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 3921

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] + D
ist[d, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c,
 d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

Rule 4004

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/Sqrt[c
sc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(-2*(A*b - a*B)*Rt[
a + (b*B)/A, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[e +
 f*x]))/(a - b))]*EllipticE[ArcSin[Sqrt[a + b*Csc[e + f*x]]/Rt[a + (b*B)/A,
 2]], (a*A + b*B)/(a*A - b*B)])/(b^2*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f, A, B}, x] && NeQ[a^2 - b^2, 0] && EqQ[A^2 - B^2, 0]
```

Rule 4058

```
Int[((A_.) + csc[(e_.) + (f_.)*(x_)]*(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.
))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Int[(A + (B - C
)*Csc[e + f*x])/Sqrt[a + b*Csc[e + f*x]], x] + Dist[C, Int[(Csc[e + f*x]*(1
 + Csc[e + f*x]))/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, e, f, A,
 B, C}, x] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a+b\sec(e+fx))^{3/2}(c+d\sec(e+fx))\,dx = \frac{2bd\sqrt{a+b\sec(e+fx)}\,\tan(e+fx)}{3f}+\frac{2}{3}\int\frac{\frac{3a^2c}{2}+\frac{1}{2}\left(6abc+3\right.}{}$$

$$=\frac{2bd\sqrt{a+b\sec(e+fx)}\,\tan(e+fx)}{3f}+\frac{2}{3}\int\frac{\frac{3a^2c}{2}+\left(-\frac{1}{2}b(3bc+\right.}{}$$

$$=-\frac{2(a-b)\sqrt{a+b}\,(3bc+4ad)\cot(e+fx)E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+f}}{\sqrt{a+b}}\right.\right.}{3bf}$$

$$=-\frac{2(a-b)\sqrt{a+b}\,(3bc+4ad)\cot(e+fx)E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+f}}{\sqrt{a+b}}\right.\right.}{3bf}$$

Mathematica [B] time = 24.76, size = 6063, normalized size = 15.96

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(3/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] Result too large to show
```

fricas [F] time = 1.28, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(bd\sec\left(fx+e\right)^2+ac+(bc+ad)\sec\left(fx+e\right)\right)\sqrt{b\sec\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral((b*d*sec(f*x + e)^2 + a*c + (b*c + a*d)*sec(f*x + e))*sqrt(b*sec(f
*x + e) + a), x)
```

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

$$\int \left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\left(d\sec\left(fx+e\right)+c\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)*(d*sec(f*x + e) + c), x)
```

maple [B] time = 1.88, size = 2337, normalized size = 6.15

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),x)
```

```
[Out] -2/3/f*(-1+cos(f*x+e))^2*(4*cos(f*x+e)^3*a^2*d-4*cos(f*x+e)^2*a^2*d+3*cos(f
*x+e)^3*a*b*c-b^2*d+cos(f*x+e)^3*a*b*d-3*cos(f*x+e)^2*a*b*c+4*cos(f*x+e)^2*
a*b*d-5*cos(f*x+e)*a*b*d+3*cos(f*x+e)^2*b^2*c-3*cos(f*x+e)*b^2*c+cos(f*x+e)
^2*b^2*d-3*cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))
/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a
+b))^(1/2))*sin(f*x+e)*b^2*c+6*cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e)))^(1/
2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticPi((-1+cos(f*x+e))
/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*c-3*cos(f*x+e)*(cos(f*x+
e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*Elli
pticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*c+3*co
s(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))
/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin
(f*x+e)*a^2*d+3*cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+
e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)
/(a+b))^(1/2))*sin(f*x+e)*b^2*c+cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2
)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/s
in(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*b^2*d-4*cos(f*x+e)*(cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE
((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*d-3*cos(f*x
+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b
))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+
e)*b^2*c+6*cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(
1+cos(f*x+e))/(a+b))^(1/2)*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((a-b)/
(a+b))^(1/2))*sin(f*x+e)*a^2*c+3*cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e)))^(
1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e)
)/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*d+3*cos(f*x+e)^2*(cos(f*x+
e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*Elli
pticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*b^2*c-3*co
s(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e
))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*s
in(f*x+e)*a^2*c+cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*
x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-
b)/(a+b))^(1/2))*sin(f*x+e)*b^2*d-4*cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x
+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*d+4*cos(f*x+e)^2*(cos(f
*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*E
```

```
llipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*d-3
*cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*
x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2)
)*sin(f*x+e)*a*b*c-4*cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*c
os(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e)
,((a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*d+6*cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+
e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(
f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*c+4*cos(f*x+e)*(cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*
EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*d-
3*cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x
+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))
*sin(f*x+e)*a*b*c-4*cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(
f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((
a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*d+6*cos(f*x+e)^2*(cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f
*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*c)*((b+a*cos(f*x+e))/
cos(f*x+e))^(1/2)*(1+cos(f*x+e))^2/(b+a*cos(f*x+e))/cos(f*x+e)/sin(f*x+e)^5
```

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

$$\int \left(b \sec\left(fx+e\right)+a\right)^{\frac{3}{2}} \left(d \sec\left(fx+e\right)+c\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)*(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)*(d*sec(f*x + e) + c), x)
```

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

$$\int {\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)}^{3/2}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x)),x)
```

```
[Out] int((a + b/cos(e + f*x))^(3/2)*(c + d/cos(e + f*x)), x)
```

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

$$\int \left(a + b \sec{\left(e + f x \right)}\right)^{\frac{3}{2}} \left(c + d \sec{\left(e + f x \right)}\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(3/2)*(c+d*sec(f*x+e)),x)
```

```
[Out] Integral((a + b*sec(e + f*x))**(3/2)*(c + d*sec(e + f*x)), x)
```

3.201 $\int \frac{(a+b\sec(e+fx))^{3/2}}{c+d\sec(e+fx)}\,dx$

Optimal. Leaf size=326

$$-\frac{2(bc-ad)^2\tan(e+fx)\sqrt{\frac{a+b\sec(e+fx)}{a+b}}\,\Pi\left(\frac{2d}{c+d};\sin^{-1}\left(\frac{\sqrt{1-\sec(e+fx)}}{\sqrt{2}}\right)|\frac{2b}{a+b}\right)}{cdf(c+d)\sqrt{-\tan^2(e+fx)}\,\sqrt{a+b\sec(e+fx)}}-\frac{2a\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\,\sqrt{\cdot}}{}$$

```
[Out] 2*b*cot(f*x+e)*EllipticF((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),((a+b)/(a-b))^(
1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^
(1/2)/d/f-2*a*cot(f*x+e)*EllipticPi((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),(a+b
)/a,((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+
sec(f*x+e))/(a-b))^(1/2)/c/f-2*(-a*d+b*c)^2*EllipticPi(1/2*(1-sec(f*x+e))^(
1/2)*2^(1/2),2*d/(c+d),2^(1/2)*(b/(a+b))^(1/2))*((a+b*sec(f*x+e))/(a+b))^(1
/2)*tan(f*x+e)/c/d/(c+d)/f/(a+b*sec(f*x+e))^(1/2)/(-tan(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.36, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3928, 3921, 3784, 3832, 3973}

$$-\frac{2(bc-ad)^2\tan(e+fx)\sqrt{\frac{a+b\sec(e+fx)}{a+b}}\,\Pi\left(\frac{2d}{c+d};\sin^{-1}\left(\frac{\sqrt{1-\sec(e+fx)}}{\sqrt{2}}\right)|\frac{2b}{a+b}\right)}{cdf(c+d)\sqrt{-\tan^2(e+fx)}\,\sqrt{a+b\sec(e+fx)}}-\frac{2a\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\,\sqrt{\cdot}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x]),x]
```

```
[Out] (2*b*Sqrt[a + b]*Cot[e + f*x]*EllipticF[ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqr
t[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*
(1 + Sec[e + f*x]))/(a - b))])/(d*f) - (2*a*Sqrt[a + b]*Cot[e + f*x]*Ellipt
icPi[(a + b)/a, ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a -
b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a -
 b))])/(c*f) - (2*(b*c - a*d)^2*EllipticPi[(2*d)/(c + d), ArcSin[Sqrt[1 - S
ec[e + f*x]]/Sqrt[2]], (2*b)/(a + b)]*Sqrt[(a + b*Sec[e + f*x])/(a + b)]*Ta
n[e + f*x])/(c*d*(c + d)*f*Sqrt[a + b*Sec[e + f*x]]*Sqrt[-Tan[e + f*x]^2])
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3921

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] + D
ist[d, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c,
```

```
d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

Rule 3928

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(3/2)/(csc[(e_.) + (f_.)*(x_)]*(
d_.) + (c_)), x_Symbol] :> Dist[1/(c*d), Int[(a^2*d + b^2*c*Csc[e + f*x])/S
qrt[a + b*Csc[e + f*x]], x], x] - Dist[(b*c - a*d)^2/(c*d), Int[Csc[e + f*x
]/(Sqrt[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])), x], x] /; FreeQ[{a, b, c
, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2,
0]
```

Rule 3973

```
Int[csc[(e_.) + (f_.)*(x_)]/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(cs
c[(e_.) + (f_.)*(x_)]*(d_.) + (c_))), x_Symbol] :> Simp[(-2*Cot[e + f*x]*Sq
rt[(a + b*Csc[e + f*x])/(a + b)]*EllipticPi[(2*d)/(c + d), ArcSin[Sqrt[1 -
Csc[e + f*x]]/Sqrt[2]], (2*b)/(a + b)])/(f*(c + d)*Sqrt[a + b*Csc[e + f*x]]
*Sqrt[-Cot[e + f*x]^2]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{3/2}}{c+d\sec(e+fx)}\,dx = \frac{\int \frac{a^2d+b^2c\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}}\,dx}{cd} - \frac{(bc-ad)^2\int \frac{\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))}\,dx}{cd}$$

$$= -\frac{2(bc-ad)^2\Pi\left(\frac{2d}{c+d};\sin^{-1}\left(\frac{\sqrt{1-\sec(e+fx)}}{\sqrt{2}}\right)|\frac{2b}{a+b}\right)\sqrt{\frac{a+b\sec(e+fx)}{a+b}}\,\tan(e+fx)}{cd(c+d)f\sqrt{a+b\sec(e+fx)}\sqrt{-\tan^2(e+fx)}} + \frac{a^2\int}{}$$

$$= \frac{2b\sqrt{a+b}\,\cot(e+fx)F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(1+\sec(e+f}{a-b}}}{df}$$

Mathematica [A] time = 6.31, size = 230, normalized size = 0.71

$$-\frac{4\cos^2\left(\frac{1}{2}(e+fx)\right)\sqrt{\frac{\cos(e+fx)}{\cos(e+fx)+1}}\sqrt{\frac{a\cos(e+fx)+b}{(a+b)(\cos(e+fx)+1)}}\sqrt{a+b\sec(e+fx)}\left(c(a-b)^2(c+d)F\left(\sin^{-1}\left(\tan\left(\frac{1}{2}(e+\right.\right.\right.\right.}{cf(c-d)(c+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x]),x]
```

```
[Out] (-4*Cos[(e + f*x)/2]^2*Sqrt[Cos[e + f*x]/(1 + Cos[e + f*x])]*Sqrt[(b + a*Co
s[e + f*x])/((a + b)*(1 + Cos[e + f*x]))]*((a - b)^2*c*(c + d)*EllipticF[Ar
cSin[Tan[(e + f*x)/2]], (a - b)/(a + b)] - 2*(a^2*(c^2 - d^2)*EllipticPi[-1
, ArcSin[Tan[(e + f*x)/2]], (a - b)/(a + b)] + (b*c - a*d)^2*EllipticPi[(c
- d)/(c + d), ArcSin[Tan[(e + f*x)/2]], (a - b)/(a + b)]))*Sqrt[a + b*Sec[e
 + f*x]])/(c*(c - d)*(c + d)*f*(b + a*Cos[e + f*x]))
```

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((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="fricas")
```

[Out] Timed out

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{d\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c), x)
```

maple [A] time = 1.70, size = 581, normalized size = 1.78

$$-\frac{2\sqrt{\frac{b+a\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\,\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\,\sqrt{\frac{b+a\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)\left(a+b\right)}}\,\left(1+\cos\left(fx+e\right)\right)^{2}\left(\mathrm{EllipticF}\left(\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)},\sqrt{\frac{a-b}{a+b}}\right)a^{2}c^{2}+\mathrm{Ell}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x)
```

```
[Out] -2/f*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*(1+cos(f*x+e))^2*(EllipticF((
-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^2*c^2+EllipticF((-1+cos(f*
x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^2*c*d-2*EllipticF((-1+cos(f*x+e))/s
in(f*x+e),((a-b)/(a+b))^(1/2))*a*b*c^2-2*EllipticF((-1+cos(f*x+e))/sin(f*x+
e),((a-b)/(a+b))^(1/2))*a*b*c*d+EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)
/(a+b))^(1/2))*b^2*c^2+EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(
1/2))*b^2*c*d-2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),(c-d)/(c+d),((a-b)/(a
+b))^(1/2))*a^2*d^2+4*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),(c-d)/(c+d),((a
-b)/(a+b))^(1/2))*a*b*c*d-2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),(c-d)/(c+
d),((a-b)/(a+b))^(1/2))*b^2*c^2-2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,
((a-b)/(a+b))^(1/2))*a^2*c^2+2*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((a
-b)/(a+b))^(1/2))*a^2*d^2)*(-1+cos(f*x+e))/(b+a*cos(f*x+e))/sin(f*x+e)^2/c/
(c-d)/(c+d)
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{d\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c), x)
```

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

$$\int \frac{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{3/2}}{c+\frac{d}{\cos\left(e+f\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x)),x)
```

```
[Out] int((a + b/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x)), x)
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^{\frac{3}{2}}}{c+d\sec\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e)),x)
[Out] Integral((a + b*sec(e + f*x))**(3/2)/(c + d*sec(e + f*x)), x)
```

3.202 $\int (a+b\sec(e+fx))^{5/2}(c+d\sec(e+fx))\,dx$

Optimal. Leaf size=442

$$-\frac{2(a-b)\sqrt{a+b}\left(23a^2d+35abc+9b^2d\right)\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right.}{15bf}$$

```
[Out] -2/15*(a-b)*(23*a^2*d+35*a*b*c+9*b^2*d)*cot(f*x+e)*EllipticE((a+b*sec(f*x+e
))^(1/2)/(a+b)^(1/2),((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+
b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/b/f+2/15*(a^2*b*(45*c-23*d)-a*b^2
*(35*c-17*d)+b^3*(5*c-9*d)+15*a^3*d)*cot(f*x+e)*EllipticF((a+b*sec(f*x+e))^
(1/2)/(a+b)^(1/2),((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))
^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/b/f-2*a^2*c*cot(f*x+e)*EllipticPi((a
+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),(a+b)/a,((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(
b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/f+2/5*b*d*(a+
b*sec(f*x+e))^(3/2)*tan(f*x+e)/f+2/15*b*(8*a*d+5*b*c)*(a+b*sec(f*x+e))^(1/2
)*tan(f*x+e)/f
```

Rubi [A] time = 0.63, antiderivative size = 442, 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 = {3918, 4056, 4058, 3921, 3784, 3832, 4004}

$$\frac{2\sqrt{a+b}\left(a^2b(45c-23d)+15a^3d-ab^2(35c-17d)+b^3(5c-9d)\right)\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,F\left(\mathrm{s}\right.}{15bf}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] (-2*(a - b)*Sqrt[a + b]*(35*a*b*c + 23*a^2*d + 9*b^2*d)*Cot[e + f*x]*Ellipt
icE[ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*
(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(15*b
*f) + (2*Sqrt[a + b]*(a^2*b*(45*c - 23*d) - a*b^2*(35*c - 17*d) + b^3*(5*c
- 9*d) + 15*a^3*d)*Cot[e + f*x]*EllipticF[ArcSin[Sqrt[a + b*Sec[e + f*x]]/S
qrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((
b*(1 + Sec[e + f*x]))/(a - b))])/(15*b*f) - (2*a^2*Sqrt[a + b]*c*Cot[e + f*
x]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a +
 b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*
x]))/(a - b))])/f + (2*b*(5*b*c + 8*a*d)*Sqrt[a + b*Sec[e + f*x]]*Tan[e + f
*x])/(15*f) + (2*b*d*(a + b*Sec[e + f*x])^(3/2)*Tan[e + f*x])/(5*f)
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3918

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> -Simp[(b*d*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m -
 1))/(f*m), x] + Dist[1/m, Int[(a + b*Csc[e + f*x])^(m - 2)*Simp[a^2*c*m +
(b^2*d*(m - 1) + 2*a*b*c*m + a^2*d*m)*Csc[e + f*x] + b*(b*c*m + a*d*(2*m -
1))*Csc[e + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && GtQ[m, 1] && NeQ[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 3921

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] + D
ist[d, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c,
 d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

Rule 4004

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/Sqrt[c
sc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(-2*(A*b - a*B)*Rt[
a + (b*B)/A, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[e +
 f*x]))/(a - b))]*EllipticE[ArcSin[Sqrt[a + b*Csc[e + f*x]]/Rt[a + (b*B)/A,
 2]], (a*A + b*B)/(a*A - b*B)])/(b^2*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f, A, B}, x] && NeQ[a^2 - b^2, 0] && EqQ[A^2 - B^2, 0]
```

Rule 4056

```
Int[((A_.) + csc[(e_.) + (f_.)*(x_)]*(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.
))*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_.), x_Symbol] :> -Simp[(C*Cot[
e + f*x]*(a + b*Csc[e + f*x])^m)/(f*(m + 1)), x] + Dist[1/(m + 1), Int[(a +
 b*Csc[e + f*x])^(m - 1)*Simp[a*A*(m + 1) + ((A*b + a*B)*(m + 1) + b*C*m)*C
sc[e + f*x] + (b*B*(m + 1) + a*C*m)*Csc[e + f*x]^2, x], x], x] /; FreeQ[{a,
 b, e, f, A, B, C}, x] && NeQ[a^2 - b^2, 0] && IGtQ[2*m, 0]
```

Rule 4058

```
Int[((A_.) + csc[(e_.) + (f_.)*(x_)]*(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.
))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Int[(A + (B - C
)*Csc[e + f*x])/Sqrt[a + b*Csc[e + f*x]], x] + Dist[C, Int[(Csc[e + f*x]*(1
 + Csc[e + f*x]))/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, e, f, A,
 B, C}, x] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int (a+b\sec(e+fx))^{5/2}(c+d\sec(e+fx))\,dx = \frac{2bd(a+b\sec(e+fx))^{3/2}\tan(e+fx)}{5f}+\frac{2}{5}\int\sqrt{a+b\sec(e+f}$$

$$=\frac{2b(5bc+8ad)\sqrt{a+b\sec(e+fx)}\,\tan(e+fx)}{15f}+\frac{2bd(a+b\sec}{}$$

$$=\frac{2b(5bc+8ad)\sqrt{a+b\sec(e+fx)}\,\tan(e+fx)}{15f}+\frac{2bd(a+b\sec}{}$$

$$=-\frac{2(a-b)\sqrt{a+b}\,\left(35abc+23a^2d+9b^2d\right)\cot(e+fx)E\left(\sin^{-1}\right.}{15bf}$$

$$=-\frac{2(a-b)\sqrt{a+b}\,\left(35abc+23a^2d+9b^2d\right)\cot(e+fx)E\left(\sin^{-1}\right.}{15bf}$$

Mathematica [B] time = 26.00, size = 7138, normalized size = 16.15

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(5/2)*(c + d*Sec[e + f*x]),x]
```

```
[Out] Result too large to show
```

fricas [F] time = 1.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2 d \sec\left(fx+e\right)^3 + a^2 c + \left(b^2 c + 2\,abd\right)\sec\left(fx+e\right)^2 + \left(2\,abc + a^2 d\right)\sec\left(fx+e\right)\right)\sqrt{b\sec\left(fx+e\right) + a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral((b^2*d*sec(f*x + e)^3 + a^2*c + (b^2*c + 2*a*b*d)*sec(f*x + e)^2 +
 (2*a*b*c + a^2*d)*sec(f*x + e))*sqrt(b*sec(f*x + e) + a), x)
```

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

$$\int \left(b\sec\left(fx+e\right) + a\right)^{\frac{5}{2}}\left(d\sec\left(fx+e\right) + c\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)*(d*sec(f*x + e) + c), x)
```

maple [B] time = 2.20, size = 3285, normalized size = 7.43

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),x)
```

```
[Out] -2/15/f*(1+cos(f*x+e))^2*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*(-1+cos(f*x+e)
)^2*(15*cos(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos
(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),(
(a-b)/(a+b))^(1/2))*a^3*d+5*cos(f*x+e)^3*b^3*c+23*cos(f*x+e)^3*sin(f*x+e)*(
cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1
/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^2*b*d+35*co
s(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(
1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b
))^(1/2))*a*b^2*c+17*cos(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1
/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))
/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*b^2*d-35*cos(f*x+e)^3*sin(f*x+e)*(cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*El
lipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^2*b*c-23*cos(f*x+
e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(
f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/
2))*a^2*b*d-35*cos(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((
b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f
*x+e),((a-b)/(a+b))^(1/2))*a*b^2*c-9*cos(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(1
+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE
((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*b^2*d+45*cos(f*x+e)^2*si
n(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))
/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^2
```

```
*b*c+23*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos
(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),(
(a-b)/(a+b))^(1/2))*a^2*b*d+35*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+c
os(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*b^2*c+17*cos(f*x+e)^2*sin(f*x+
e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b)
)^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*b^2*d-3
5*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e
))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/
(a+b))^(1/2))*a^2*b*c-23*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e))
)^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x
+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^2*b*d-35*cos(f*x+e)^2*sin(f*x+e)*(co
s(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2
)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a*b^2*c-9*cos(f
*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+c
os(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^
(1/2))*a*b^2*d+45*cos(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/si
n(f*x+e),((a-b)/(a+b))^(1/2))*a^2*b*c-5*cos(f*x+e)*b^3*c+23*cos(f*x+e)^4*a^
3*d-23*cos(f*x+e)^3*a^3*d+9*cos(f*x+e)^3*b^3*d-6*cos(f*x+e)^2*b^3*d-3*b^3*d
-35*cos(f*x+e)^3*a^2*b*c+23*cos(f*x+e)^3*a^2*b*d+35*cos(f*x+e)^3*a*b^2*c+5*
cos(f*x+e)^3*a*b^2*d-34*cos(f*x+e)^2*a^2*b*d-40*cos(f*x+e)^2*a*b^2*c-14*cos
(f*x+e)*a*b^2*d+35*cos(f*x+e)^4*a^2*b*c+11*cos(f*x+e)^4*a^2*b*d+5*cos(f*x+e
)^4*a*b^2*c+9*cos(f*x+e)^4*a*b^2*d-15*cos(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(
1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*Elliptic
F((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^3*c-23*cos(f*x+e)^2*sin
(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/
(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^3*
d+9*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x
+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b
)/(a+b))^(1/2))*b^3*d+5*cos(f*x+e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+
e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*b^3*c+9*cos(f*x+e)^3*sin(f*x+e)*(cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*El
lipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*b^3*d-23*cos(f*x+e)
^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*
x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2)
)*a^3*d-9*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*c
os(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e)
,((a-b)/(a+b))^(1/2))*b^3*d+30*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f
*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticPi((-1+
cos(f*x+e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*a^3*c+30*cos(f*x+e)^3*sin(f*
x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+
b))^(1/2)*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*a^3
*c-15*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f
*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a
-b)/(a+b))^(1/2))*a^3*c+15*cos(f*x+e)^2*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e
)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f
*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*a^3*d+5*cos(f*x+e)^2*sin(f*x+e)*(cos
(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)
*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*b^3*c-9*cos(f*x+
e)^3*sin(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(
f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/
2))*b^3*d)/(b+a*cos(f*x+e))/cos(f*x+e)^2/sin(f*x+e)^5
```

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

$$\int \left(b\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}\left(d\sec\left(fx+e\right)+c\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)*(c+d*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)*(d*sec(f*x + e) + c), x)
```

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

$$\int \left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{5/2}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x)),x)
```

```
[Out] int((a + b/cos(e + f*x))^(5/2)*(c + d/cos(e + f*x)), x)
```

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

$$\int \left(a + b \sec{\left(e + f x \right)}\right)^{\frac{5}{2}} \left(c + d \sec{\left(e + f x \right)}\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(5/2)*(c+d*sec(f*x+e)),x)
```

```
[Out] Integral((a + b*sec(e + f*x))**(5/2)*(c + d*sec(e + f*x)), x)
```

3.203 $\int \frac{c+d\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}}\,dx$

Optimal. Leaf size=208

$$\frac{2d\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)}{bf}-\frac{2c\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(}{}}}{}$$

```
[Out] 2*d*cot(f*x+e)*EllipticF((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),((a+b)/(a-b))^(
1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^
(1/2)/b/f-2*c*cot(f*x+e)*EllipticPi((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),(a+b
)/a,((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+
sec(f*x+e))/(a-b))^(1/2)/a/f
```

Rubi [A] time = 0.12, antiderivative size = 208, 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 = {3921, 3784, 3832}

$$\frac{2d\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)}{bf}-\frac{2c\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(}{}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])/Sqrt[a + b*Sec[e + f*x]],x]
```

```
[Out] (2*Sqrt[a + b]*d*Cot[e + f*x]*EllipticF[ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqr
t[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*
(1 + Sec[e + f*x]))/(a - b))])/(b*f) - (2*Sqrt[a + b]*c*Cot[e + f*x]*Ellipt
icPi[(a + b)/a, ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a -
b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a -
 b))])/(a*f)
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3921

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] + D
ist[d, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c,
 d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{c+d\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}}\,dx = c\int \frac{1}{\sqrt{a+b\sec(e+fx)}}\,dx + d\int \frac{\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}}\,dx$$
$$= \frac{2\sqrt{a+b}\,d\cot(e+fx)F\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(1+\sec(e+fx))}{a-b}}}{bf}$$

Mathematica [A] time = 2.69, size = 145, normalized size = 0.70

$$\frac{4\cos^2\left(\frac{1}{2}(e+fx)\right)\sqrt{\frac{\cos(e+fx)}{\cos(e+fx)+1}}\sec(e+fx)\sqrt{\frac{a\cos(e+fx)+b}{(a+b)(\cos(e+fx)+1)}}\left((d-c)F\left(\sin^{-1}\left(\tan\left(\frac{1}{2}(e+fx)\right)\right)|\frac{a-b}{a+b}\right)+2c\Pi\left(-1\right.\right.}{f\sqrt{a+b\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*Sec[e + f*x])/Sqrt[a + b*Sec[e + f*x]],x]
```

```
[Out] (4*Cos[(e + f*x)/2]^2*Sqrt[Cos[e + f*x]/(1 + Cos[e + f*x])]*Sqrt[(b + a*Cos
[e + f*x])/((a + b)*(1 + Cos[e + f*x]))]*((-c + d)*EllipticF[ArcSin[Tan[(e
+ f*x)/2]], (a - b)/(a + b)] + 2*c*EllipticPi[-1, ArcSin[Tan[(e + f*x)/2]],
 (a - b)/(a + b)])*Sec[e + f*x])/(f*Sqrt[a + b*Sec[e + f*x]])
```

fricas [F] time = 1.38, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{d\sec\left(fx+e\right)+c}{\sqrt{b\sec\left(fx+e\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] integral((d*sec(f*x + e) + c)/sqrt(b*sec(f*x + e) + a), x)
```

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

$$\int \frac{d\sec\left(fx+e\right)+c}{\sqrt{b\sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e) + c)/sqrt(b*sec(f*x + e) + a), x)
```

maple [A] time = 1.72, size = 215, normalized size = 1.03

$$-\frac{2\sqrt{\frac{b+a\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sqrt{\frac{b+a\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)(a+b)}}\left(1+\cos\left(fx+e\right)\right)^2\left(-1+\cos\left(fx+e\right)\right)\left(\text{EllipticF}\left(\frac{-1+\cos\left(fx+e\right)}{\sin\left(fx+e\right)}\right.\right.}{f\left(b+a\cos\left(fx+e\right)\right)\sin\left(fx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x)
```

```
[Out] -2/f*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*(1+cos(f*x+e))^2*(-1+cos(f*x+
```

```
e))*(EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*c-EllipticF(
(-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*d-2*EllipticPi((-1+cos(f*x+
e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*c)/(b+a*cos(f*x+e))/sin(f*x+e)^2
```

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

$$\int \frac{d \sec\left(fx+e\right)+c}{\sqrt{b \sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x, algorithm="maxima")
[Out] integrate((d*sec(f*x + e) + c)/sqrt(b*sec(f*x + e) + a), x)
```

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

$$\int \frac{c+\frac{d}{\cos\left(e+f\,x\right)}}{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))/(a + b/cos(e + f*x))^(1/2),x)
[Out] int((c + d/cos(e + f*x))/(a + b/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{c+d \sec\left(e+fx\right)}{\sqrt{a+b \sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))**(1/2),x)
[Out] Integral((c + d*sec(e + f*x))/sqrt(a + b*sec(e + f*x)), x)
```

3.204 $\int \frac{1}{\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))}\,dx$

Optimal. Leaf size=216

$$-\frac{2d\tan(e+fx)\sqrt{\frac{a+b\sec(e+fx)}{a+b}}\,\Pi\left(\frac{2d}{c+d};\sin^{-1}\left(\frac{\sqrt{1-\sec(e+fx)}}{\sqrt{2}}\right)|\frac{2b}{a+b}\right)}{cf(c+d)\sqrt{-\tan^2(e+fx)}\sqrt{a+b\sec(e+fx)}}-\frac{2\sqrt{a+b}\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx}{a-b}}}{acf}$$

```
[Out] -2*cot(f*x+e)*EllipticPi((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),(a+b)/a,((a+b)/
(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))
/(a-b))^(1/2)/a/c/f-2*d*EllipticPi(1/2*(1-sec(f*x+e))^(1/2)*2^(1/2),2*d/(c+
d),2^(1/2)*(b/(a+b))^(1/2))*((a+b*sec(f*x+e))/(a+b))^(1/2)*tan(f*x+e)/c/(c+
d)/f/(a+b*sec(f*x+e))^(1/2)/(-tan(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {3930, 3784, 3973}

$$-\frac{2d\tan(e+fx)\sqrt{\frac{a+b\sec(e+fx)}{a+b}}\,\Pi\left(\frac{2d}{c+d};\sin^{-1}\left(\frac{\sqrt{1-\sec(e+fx)}}{\sqrt{2}}\right)|\frac{2b}{a+b}\right)}{cf(c+d)\sqrt{-\tan^2(e+fx)}\sqrt{a+b\sec(e+fx)}}-\frac{2\sqrt{a+b}\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx}{a-b}}}{acf}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*x])),x]
```

```
[Out] (-2*Sqrt[a + b]*Cot[e + f*x]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Sec[e
+ f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]
*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(a*c*f) - (2*d*EllipticPi[(2*d)/(
c + d), ArcSin[Sqrt[1 - Sec[e + f*x]]/Sqrt[2]], (2*b)/(a + b)]*Sqrt[(a + b*
Sec[e + f*x])/(a + b)]*Tan[e + f*x])/(c*(c + d)*f*Sqrt[a + b*Sec[e + f*x]]*
Sqrt[-Tan[e + f*x]^2])
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3930

```
Int[1/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(csc[(e_.) + (f_.)*(x_)]*
(d_.) + (c_))), x_Symbol] :> Dist[1/c, Int[1/Sqrt[a + b*Csc[e + f*x]], x],
x] - Dist[d/c, Int[Csc[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*
x])), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^
2 - b^2, 0]
```

Rule 3973

```
Int[csc[(e_.) + (f_.)*(x_)]/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*(cs
c[(e_.) + (f_.)*(x_)]*(d_.) + (c_))), x_Symbol] :> Simp[(-2*Cot[e + f*x]*Sq
rt[(a + b*Csc[e + f*x])/(a + b)]*EllipticPi[(2*d)/(c + d), ArcSin[Sqrt[1 -
Csc[e + f*x]]/Sqrt[2]], (2*b)/(a + b)])/(f*(c + d)*Sqrt[a + b*Csc[e + f*x]]
*Sqrt[-Cot[e + f*x]^2]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*
d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))}\,dx = \frac{\int \frac{1}{\sqrt{a+b\sec(e+fx)}}\,dx}{c} - \frac{d\int \frac{\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))}\,dx}{c}$$

$$= -\frac{2\sqrt{a+b}\,\cot(e+fx)\Pi\left(\frac{a+b}{a};\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-}{}}}{acf}$$

Mathematica [A] time = 8.62, size = 251, normalized size = 1.16

$$-\frac{2\sec^{\frac{3}{2}}(e+fx)\sqrt{\sec(e+fx)+1}\sqrt{\cos(e+fx)\sec^2\left(\frac{1}{2}(e+fx)\right)}\sqrt{\frac{a\cos(e+fx)+b}{(a+b)(\cos(e+fx)+1)}}\,(c\cos(e+fx)+d)\left(c(c+\right.}{cf(c-d)(c+d)\sqrt{\sec^2\left(\frac{1}{2}(\right.}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*x])),x]
```

```
[Out] (-2*Sqrt[(b + a*Cos[e + f*x])/((a + b)*(1 + Cos[e + f*x]))]*(d + c*Cos[e +
f*x])*(c*(c + d)*EllipticF[ArcSin[Tan[(e + f*x)/2]], (a - b)/(a + b)] - 2*(
(c^2 - d^2)*EllipticPi[-1, ArcSin[Tan[(e + f*x)/2]], (a - b)/(a + b)] + d^2
*EllipticPi[(c - d)/(c + d), ArcSin[Tan[(e + f*x)/2]], (a - b)/(a + b)]))*S
qrt[Cos[e + f*x]*Sec[(e + f*x)/2]^2]*Sec[e + f*x]^(3/2)*Sqrt[1 + Sec[e + f*
x]])/(c*(c - d)*(c + d)*f*Sqrt[Sec[(e + f*x)/2]^2]*Sqrt[a + b*Sec[e + f*x]]
*(c + d*Sec[e + f*x]))
```

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/(c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

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

$$\int \frac{1}{\sqrt{b\sec\left(fx+e\right)+a}\left(d\sec\left(fx+e\right)+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c)), x)
```

maple [A] time = 1.80, size = 318, normalized size = 1.47

$$-\frac{2\sqrt{\frac{b+a\cos\left(fx+e\right)}{\cos\left(fx+e\right)}}\sqrt{\frac{\cos\left(fx+e\right)}{1+\cos\left(fx+e\right)}}\sqrt{\frac{b+a\cos\left(fx+e\right)}{\left(1+\cos\left(fx+e\right)\right)(a+b)}}\left(1+\cos\left(fx+e\right)\right)^2\left(-1+\cos\left(fx+e\right)\right)\left(c^2\,\mathrm{EllipticF}\left(\frac{-1+\mathrm{c}}{\sin}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x)
```

```
[Out] -2/f*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*
((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*(1+cos(f*x+e))^2*(-1+cos(f*x+
e))*(c^2*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))+d*Ellipt
icF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*c-2*EllipticPi((-1+cos(
f*x+e))/sin(f*x+e),(c-d)/(c+d),((a-b)/(a+b))^(1/2))*d^2-2*c^2*EllipticPi((-
1+cos(f*x+e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))+2*EllipticPi((-1+cos(f*x+e
))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*d^2)/(b+a*cos(f*x+e))/sin(f*x+e)^2/c/
(c-d)/(c+d)
```

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

$$\int \frac{1}{\sqrt{b\sec\left(fx+e\right)+a}\,\left(d\sec\left(fx+e\right)+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c)), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}\,\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))),x)
```

```
[Out] int(1/((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))), x)
```

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

$$\int \frac{1}{\sqrt{a+b\sec\left(e+fx\right)}\,\left(c+d\sec\left(e+fx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))/(a+b*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*sec(e + f*x))*(c + d*sec(e + f*x))), x)
```

3.205 $\int \frac{c+d\sec(e+fx)}{(a+b\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=376

$$\frac{2b(bc-ad)\tan(e+fx)}{af\left(a^2-b^2\right)\sqrt{a+b\sec(e+fx)}}-\frac{2c\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,\Pi\left(\frac{a+b}{a};\sin^{-1}\left(\frac{\sqrt{a+b\sec(e}}{\sqrt{a+b}}\right.\right.}{a^2f}$$

```
[Out] 2*(-a*d+b*c)*cot(f*x+e)*EllipticE((a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2),((a+b)
/(a-b))^(1/2))*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/
2)/a/b/f/(a+b)^(1/2)-2*(-a*d+b*c)*cot(f*x+e)*EllipticF((a+b*sec(f*x+e))^(1/
2)/(a+b)^(1/2),((a+b)/(a-b))^(1/2))*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+s
ec(f*x+e))/(a-b))^(1/2)/a/b/f/(a+b)^(1/2)-2*c*cot(f*x+e)*EllipticPi((a+b*se
c(f*x+e))^(1/2)/(a+b)^(1/2),(a+b)/a,((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-
sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/a^2/f+2*b*(-a*d+b*
c)*tan(f*x+e)/a/(a^2-b^2)/f/(a+b*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.43, antiderivative size = 376, 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 = {3923, 4058, 3921, 3784, 3832, 4004}

$$\frac{2b(bc-ad)\tan(e+fx)}{af\left(a^2-b^2\right)\sqrt{a+b\sec(e+fx)}}-\frac{2c\sqrt{a+b}\,\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,\Pi\left(\frac{a+b}{a};\sin^{-1}\left(\frac{\sqrt{a+b\sec(e}}{\sqrt{a+b}}\right.\right.}{a^2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])/(a + b*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*(b*c - a*d)*Cot[e + f*x]*EllipticE[ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[
a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1
 + Sec[e + f*x]))/(a - b))])/(a*b*Sqrt[a + b]*f) - (2*(b*c - a*d)*Cot[e + f
*x]*EllipticF[ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)
]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b
))])/(a*b*Sqrt[a + b]*f) - (2*Sqrt[a + b]*c*Cot[e + f*x]*EllipticPi[(a + b)
/a, ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*
(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(a^2*
f) + (2*b*(b*c - a*d)*Tan[e + f*x])/(a*(a^2 - b^2)*f*Sqrt[a + b*Sec[e + f*x
]])
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3921

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] + D
```

```
ist[d, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c,
 d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

Rule 3923

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> Simp[(b*(b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f
*x])^(m + 1))/(a*f*(m + 1)*(a^2 - b^2)), x] + Dist[1/(a*(m + 1)*(a^2 - b^2)
), Int[(a + b*Csc[e + f*x])^(m + 1)*Simp[c*(a^2 - b^2)*(m + 1) - (a*(b*c -
a*d)*(m + 1))*Csc[e + f*x] + b*(b*c - a*d)*(m + 2)*Csc[e + f*x]^2, x], x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && Ne
Q[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 4004

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/Sqrt[c
sc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(-2*(A*b - a*B)*Rt[
a + (b*B)/A, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[e +
 f*x]))/(a - b))]*EllipticE[ArcSin[Sqrt[a + b*Csc[e + f*x]]/Rt[a + (b*B)/A,
 2]], (a*A + b*B)/(a*A - b*B)])/(b^2*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f, A, B}, x] && NeQ[a^2 - b^2, 0] && EqQ[A^2 - B^2, 0]
```

Rule 4058

```
Int[((A_.) + csc[(e_.) + (f_.)*(x_)]*(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.
))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Int[(A + (B - C
)*Csc[e + f*x])/Sqrt[a + b*Csc[e + f*x]], x] + Dist[C, Int[(Csc[e + f*x]*(1
 + Csc[e + f*x]))/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, e, f, A,
 B, C}, x] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{c+d\sec(e+fx)}{(a+b\sec(e+fx))^{3/2}}\,dx = \frac{2b(bc-ad)\tan(e+fx)}{a\left(a^2-b^2\right)f\sqrt{a+b\sec(e+fx)}} - \frac{2\int \frac{-\frac{1}{2}\left(a^2-b^2\right)c+\frac{1}{2}a(bc-ad)\sec(e+fx)+\frac{1}{2}b(bc-ad)\sec^2(e+fx}{\sqrt{a+b\sec(e+fx)}}}{a\left(a^2-b^2\right)}$$

$$= \frac{2b(bc-ad)\tan(e+fx)}{a\left(a^2-b^2\right)f\sqrt{a+b\sec(e+fx)}} - \frac{2\int \frac{-\frac{1}{2}\left(a^2-b^2\right)c+\left(\frac{1}{2}a(bc-ad)-\frac{1}{2}b(bc-ad)\right)\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}}dx}{a\left(a^2-b^2\right)} - $$

$$= \frac{2(bc-ad)\cot(e+fx)E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(1+\sec(e+fx))}{a-b}}}{ab\sqrt{a+b}f}$$

$$= \frac{2(bc-ad)\cot(e+fx)E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(1+\sec(e+fx))}{a-b}}}{ab\sqrt{a+b}f}$$

Mathematica [C] time = 14.82, size = 1491, normalized size = 3.97

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*Sec[e + f*x])/(a + b*Sec[e + f*x])^(3/2),x]
```

```
[Out] ((b + a*Cos[e + f*x])^2*Sec[e + f*x]*(c + d*Sec[e + f*x])*((2*(-(b*c) + a*d
)*Sin[e + f*x]))/(a*(a^2 - b^2)) - (2*(-(b^2*c*Sin[e + f*x]) + a*b*d*Sin[e +
```

```
f*x]))/(a*(a^2 - b^2)*(b + a*Cos[e + f*x]))))/(f*(d + c*Cos[e + f*x])*(a +
b*Sec[e + f*x])^(3/2)) + (2*(b + a*Cos[e + f*x])^(3/2)*Sqrt[Sec[e + f*x]]*
(c + d*Sec[e + f*x])*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2
]^2)/(1 + Tan[(e + f*x)/2]^2)]*(a*b*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/
2] + b^2*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2] - a^2*Sqrt[(-a + b)/(a +
b)]*d*Tan[(e + f*x)/2] - a*b*Sqrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/2] - 2
*a*b*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2]^3 + 2*a^2*Sqrt[(-a + b)/(a +
b)]*d*Tan[(e + f*x)/2]^3 + a*b*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2]^5
- b^2*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2]^5 - a^2*Sqrt[(-a + b)/(a +
b)]*d*Tan[(e + f*x)/2]^5 + a*b*Sqrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/2]^5
- (2*I)*a^2*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a +
b)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*Sqrt[(
a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] + (2*I)*b^2*c
*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f
*x)/2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*Sqrt[(a + b - a*Tan[
(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] - (2*I)*a^2*c*EllipticPi[-(
(a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]], (a +
b)/(a - b)]*Tan[(e + f*x)/2]^2*Sqrt[1 - Tan[(e + f*x)/2]^2]*Sqrt[(a + b - a
*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] + (2*I)*b^2*c*Elliptic
Pi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]],
(a + b)/(a - b)]*Tan[(e + f*x)/2]^2*Sqrt[1 - Tan[(e + f*x)/2]^2]*Sqrt[(a +
b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] + I*(a - b)*(-(b*
c) + a*d)*EllipticE[I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]], (a
+ b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*(1 + Tan[(e + f*x)/2]^2)*Sqrt[(a
+ b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] + I*(a - b)*(2
*b*c + a*(c - d))*EllipticF[I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/
2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*(1 + Tan[(e + f*x)/2]^2)
*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)]))/(a*S
qrt[(-a + b)/(a + b)]*(a^2 - b^2)*f*(d + c*Cos[e + f*x])*(a + b*Sec[e + f*x
])^(3/2)*(-1 + Tan[(e + f*x)/2]^2)*Sqrt[(1 + Tan[(e + f*x)/2]^2)/(1 - Tan[(
e + f*x)/2]^2)]*(a*(-1 + Tan[(e + f*x)/2]^2) - b*(1 + Tan[(e + f*x)/2]^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((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(3/2),x, algorithm="fricas")
[Out] Timed out
```

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

$$\int \frac{d \sec \left(fx+e\right)+c}{\left(b \sec \left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(3/2),x, algorithm="giac")
[Out] integrate((d*sec(f*x + e) + c)/(b*sec(f*x + e) + a)^(3/2), x)
```

maple [B] time = 1.80, size = 2010, normalized size = 5.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(3/2),x)
```

```
[Out] -1/f*4^(1/2)*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*(cos(f*x+e)^2*a^2*d-sin(f*
x+e)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*(cos(f*x+e)/
(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*a^2*c+s
in(f*x+e)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*(cos(f*
x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*a^
2*d+cos(f*x+e)*a*b*c-cos(f*x+e)*a^2*d-cos(f*x+e)^2*a*b*c-cos(f*x+e)^2*a*b*d
+cos(f*x+e)*a*b*d+cos(f*x+e)^2*b^2*c-cos(f*x+e)*b^2*c-2*cos(f*x+e)*sin(f*x+
e)*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*(cos(f*x+e
)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*b^2*c
-sin(f*x+e)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*(cos(
f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*
a*b*c+sin(f*x+e)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*
(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(
1/2)*a*b*d+sin(f*x+e)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1
/2))*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+
b))^(1/2)*a*b*c-sin(f*x+e)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b
))^(1/2))*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e)
)/(a+b))^(1/2)*a*b*d-cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos
(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),(
(a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*c+cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+
e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*d-cos(f*x+e)*(cos(f*x+e)
/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*Ellipt
icE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a^2*d+cos(f*
x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+
b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x
+e)*b^2*c+2*cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/
(1+cos(f*x+e))/(a+b))^(1/2)*EllipticPi((-1+cos(f*x+e))/sin(f*x+e),-1,((a-b)
/(a+b))^(1/2))*sin(f*x+e)*a^2*c-sin(f*x+e)*EllipticE((-1+cos(f*x+e))/sin(f*
x+e),((a-b)/(a+b))^(1/2))*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e
))/(1+cos(f*x+e))/(a+b))^(1/2)*a^2*d+sin(f*x+e)*EllipticE((-1+cos(f*x+e))/s
in(f*x+e),((a-b)/(a+b))^(1/2))*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(
f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*b^2*c+2*sin(f*x+e)*EllipticPi((-1+cos(f
*x+e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)
*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*a^2*c-2*sin(f*x+e)*EllipticP
i((-1+cos(f*x+e))/sin(f*x+e),-1,((a-b)/(a+b))^(1/2))*(cos(f*x+e)/(1+cos(f*x
+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*b^2*c-cos(f*x+e)*
(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(
1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a
*b*c+cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos(f*x+e))/(1+cos(
f*x+e))/(a+b))^(1/2)*EllipticF((-1+cos(f*x+e))/sin(f*x+e),((a-b)/(a+b))^(1/
2))*sin(f*x+e)*a*b*d+cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))^(1/2)*((b+a*cos
(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+e))/sin(f*x+e),(
(a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*c-cos(f*x+e)*(cos(f*x+e)/(1+cos(f*x+e)))
^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*EllipticE((-1+cos(f*x+
e))/sin(f*x+e),((a-b)/(a+b))^(1/2))*sin(f*x+e)*a*b*d)/(b+a*cos(f*x+e))/sin(
f*x+e)/a/(a+b)/(a-b)
```

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

$$\int \frac{d \sec\left(fx+e\right)+c}{\left(b \sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e) + c)/(b*sec(f*x + e) + a)^(3/2), x)
```

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

$$\int \frac{c+\frac{d}{\cos\left(e+f\,x\right)}}{{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))/(a + b/cos(e + f*x))^(3/2),x)
[Out] int((c + d/cos(e + f*x))/(a + b/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{c+d\sec\left(e+fx\right)}{\left(a+b\sec\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))**(3/2),x)
[Out] Integral((c + d*sec(e + f*x))/(a + b*sec(e + f*x))**(3/2), x)
```

3.206 $\int \frac{c+d\sec(e+fx)}{(a+b\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=495

$$-\frac{2c\sqrt{a+b}\cot(e+fx)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{-\frac{b(\sec(e+fx)+1)}{a-b}}\,\Pi\left(\frac{a+b}{a};\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)}{a^3f}+\frac{2b(bc-ad)\tan(e}{3af\left(a^2-b^2\right)(a+b\,\mathrm{se}}$$

```
[Out] 2/3*(-4*a^3*d+7*a^2*b*c-3*b^3*c)*cot(f*x+e)*EllipticE((a+b*sec(f*x+e))^(1/2
)/(a+b)^(1/2),((a+b)/(a-b))^(1/2))*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+se
c(f*x+e))/(a-b))^(1/2)/a^2/(a-b)/b/(a+b)^(3/2)/f-2/3*(-3*a^3*d+6*a^2*b*c+a^
2*b*d-a*b^2*c-3*b^3*c)*cot(f*x+e)*EllipticF((a+b*sec(f*x+e))^(1/2)/(a+b)^(1
/2),((a+b)/(a-b))^(1/2))*(b*(1-sec(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/
(a-b))^(1/2)/a^2/(a-b)/b/(a+b)^(3/2)/f-2*c*cot(f*x+e)*EllipticPi((a+b*sec(f
*x+e))^(1/2)/(a+b)^(1/2),(a+b)/a,((a+b)/(a-b))^(1/2))*(a+b)^(1/2)*(b*(1-sec
(f*x+e))/(a+b))^(1/2)*(-b*(1+sec(f*x+e))/(a-b))^(1/2)/a^3/f+2/3*b*(-a*d+b*c
)*tan(f*x+e)/a/(a^2-b^2)/f/(a+b*sec(f*x+e))^(3/2)+2/3*b*(-4*a^3*d+7*a^2*b*c
-3*b^3*c)*tan(f*x+e)/a^2/(a^2-b^2)^2/f/(a+b*sec(f*x+e))^(1/2)
```

Rubi [A] time = 0.78, antiderivative size = 495, 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 = {3923, 4060, 4058, 3921, 3784, 3832, 4004}

$$\frac{2b\left(7a^2bc-4a^3d-3b^3c\right)\tan(e+fx)}{3a^2f\left(a^2-b^2\right)^2\sqrt{a+b\sec(e+fx)}}+\frac{2b(bc-ad)\tan(e+fx)}{3af\left(a^2-b^2\right)(a+b\sec(e+fx))^{3/2}}-\frac{2\left(6a^2bc+a^2bd-3a^3d-ab^2c-3b^3c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*Sec[e + f*x])/(a + b*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*(7*a^2*b*c - 3*b^3*c - 4*a^3*d)*Cot[e + f*x]*EllipticE[ArcSin[Sqrt[a + b
*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(
a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b))])/(3*a^2*(a - b)*b*(a + b)^(
3/2)*f) - (2*(6*a^2*b*c - a*b^2*c - 3*b^3*c - 3*a^3*d + a^2*b*d)*Cot[e + f*
x]*EllipticF[ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a - b)]
*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a - b)
)])/(3*a^2*(a - b)*b*(a + b)^(3/2)*f) - (2*Sqrt[a + b]*c*Cot[e + f*x]*Ellip
ticPi[(a + b)/a, ArcSin[Sqrt[a + b*Sec[e + f*x]]/Sqrt[a + b]], (a + b)/(a -
 b)]*Sqrt[(b*(1 - Sec[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Sec[e + f*x]))/(a
- b))])/(a^3*f) + (2*b*(b*c - a*d)*Tan[e + f*x])/(3*a*(a^2 - b^2)*f*(a + b*
Sec[e + f*x])^(3/2)) + (2*b*(7*a^2*b*c - 3*b^3*c - 4*a^3*d)*Tan[e + f*x])/(
3*a^2*(a^2 - b^2)^2*f*Sqrt[a + b*Sec[e + f*x]])
```

Rule 3784

```
Int[1/Sqrt[csc[(c_.) + (d_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(2*Rt[a
 + b, 2]*Sqrt[(b*(1 - Csc[c + d*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[c + d*x]))
/(a - b))]*EllipticPi[(a + b)/a, ArcSin[Sqrt[a + b*Csc[c + d*x]]/Rt[a + b,
2]], (a + b)/(a - b)])/(a*d*Cot[c + d*x]), x] /; FreeQ[{a, b, c, d}, x] &&
NeQ[a^2 - b^2, 0]
```

Rule 3832

```
Int[csc[(e_.) + (f_.)*(x_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_S
ymbol] :> Simp[(-2*Rt[a + b, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-
((b*(1 + Csc[e + f*x]))/(a - b))]*EllipticF[ArcSin[Sqrt[a + b*Csc[e + f*x]]
/Rt[a + b, 2]], (a + b)/(a - b)])/(b*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3921

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_
.) + (a_)], x_Symbol] :> Dist[c, Int[1/Sqrt[a + b*Csc[e + f*x]], x], x] + D
ist[d, Int[Csc[e + f*x]/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c,
 d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

Rule 3923

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_)), x_Symbol] :> Simp[(b*(b*c - a*d)*Cot[e + f*x]*(a + b*Csc[e + f
*x])^(m + 1))/(a*f*(m + 1)*(a^2 - b^2)), x] + Dist[1/(a*(m + 1)*(a^2 - b^2)
), Int[(a + b*Csc[e + f*x])^(m + 1)*Simp[c*(a^2 - b^2)*(m + 1) - (a*(b*c -
a*d)*(m + 1))*Csc[e + f*x] + b*(b*c - a*d)*(m + 2)*Csc[e + f*x]^2, x], x],
x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && Ne
Q[a^2 - b^2, 0] && IntegerQ[2*m]
```

Rule 4004

```
Int[(csc[(e_.) + (f_.)*(x_)]*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)))/Sqrt[c
sc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Simp[(-2*(A*b - a*B)*Rt[
a + (b*B)/A, 2]*Sqrt[(b*(1 - Csc[e + f*x]))/(a + b)]*Sqrt[-((b*(1 + Csc[e +
 f*x]))/(a - b))]*EllipticE[ArcSin[Sqrt[a + b*Csc[e + f*x]]/Rt[a + (b*B)/A,
 2]], (a*A + b*B)/(a*A - b*B)])/(b^2*f*Cot[e + f*x]), x] /; FreeQ[{a, b, e,
 f, A, B}, x] && NeQ[a^2 - b^2, 0] && EqQ[A^2 - B^2, 0]
```

Rule 4058

```
Int[((A_.) + csc[(e_.) + (f_.)*(x_)]*(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.
))/Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)], x_Symbol] :> Int[(A + (B - C
)*Csc[e + f*x])/Sqrt[a + b*Csc[e + f*x]], x] + Dist[C, Int[(Csc[e + f*x]*(1
 + Csc[e + f*x]))/Sqrt[a + b*Csc[e + f*x]], x], x] /; FreeQ[{a, b, e, f, A,
 B, C}, x] && NeQ[a^2 - b^2, 0]
```

Rule 4060

```
Int[((A_.) + csc[(e_.) + (f_.)*(x_)]*(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.
))*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_), x_Symbol] :> Simp[((A*b^2 -
 a*b*B + a^2*C)*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m + 1))/(a*f*(m + 1)*(a^
2 - b^2)), x] + Dist[1/(a*(m + 1)*(a^2 - b^2)), Int[(a + b*Csc[e + f*x])^(m
 + 1)*Simp[A*(a^2 - b^2)*(m + 1) - a*(A*b - a*B + b*C)*(m + 1)*Csc[e + f*x]
 + (A*b^2 - a*b*B + a^2*C)*(m + 2)*Csc[e + f*x]^2, x], x], x] /; FreeQ[{a,
b, e, f, A, B, C}, x] && NeQ[a^2 - b^2, 0] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{c+d\sec(e+fx)}{(a+b\sec(e+fx))^{5/2}}\,dx = \frac{2b(bc-ad)\tan(e+fx)}{3a\left(a^2-b^2\right)f(a+b\sec(e+fx))^{3/2}} - \frac{2\int \frac{-\frac{3}{2}\left(a^2-b^2\right)c+\frac{3}{2}a(bc-ad)\sec(e+fx)-\frac{1}{2}b(bc-ad)\sec^2(e-}{(a+b\sec(e+fx))^{3/2}}}{3a\left(a^2-b^2\right)}$$

$$= \frac{2b(bc-ad)\tan(e+fx)}{3a\left(a^2-b^2\right)f(a+b\sec(e+fx))^{3/2}} + \frac{2b\left(7a^2bc-3b^3c-4a^3d\right)\tan(e+fx)}{3a^2\left(a^2-b^2\right)^2 f\sqrt{a+b\sec(e+fx)}} + \frac{4\int}{}$$

$$= \frac{2b(bc-ad)\tan(e+fx)}{3a\left(a^2-b^2\right)f(a+b\sec(e+fx))^{3/2}} + \frac{2b\left(7a^2bc-3b^3c-4a^3d\right)\tan(e+fx)}{3a^2\left(a^2-b^2\right)^2 f\sqrt{a+b\sec(e+fx)}} + \frac{4\int}{}$$

$$= \frac{2\left(7a^2bc-3b^3c-4a^3d\right)\cot(e+fx)E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{}}{3a^2(a-b)b(a+b)^{3/2}f}$$

$$= \frac{2\left(7a^2bc-3b^3c-4a^3d\right)\cot(e+fx)E\left(\sin^{-1}\left(\frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}}\right)|\frac{a+b}{a-b}\right)\sqrt{\frac{b(1-\sec(e+fx))}{a+b}}\sqrt{}}{3a^2(a-b)b(a+b)^{3/2}f}$$

Mathematica [C] time = 17.43, size = 2083, normalized size = 4.21

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])/(a + b*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((b + a*Cos[e + f*x])^3*Sec[e + f*x]^2*(c + d*Sec[e + f*x])*((2*(-7*a^2*b*c
 + 3*b^3*c + 4*a^3*d)*Sin[e + f*x])/(3*a^2*(a^2 - b^2)^2) - (2*(b^3*c*Sin[e
 + f*x] - a*b^2*d*Sin[e + f*x]))/(3*a^2*(a^2 - b^2)*(b + a*Cos[e + f*x])^2)
 - (2*(-8*a^2*b^2*c*Sin[e + f*x] + 4*b^4*c*Sin[e + f*x] + 5*a^3*b*d*Sin[e +
 f*x] - a*b^3*d*Sin[e + f*x]))/(3*a^2*(a^2 - b^2)^2*(b + a*Cos[e + f*x]))))
/(f*(d + c*Cos[e + f*x])*(a + b*Sec[e + f*x])^(5/2)) + (2*(b + a*Cos[e + f*
x])^(5/2)*Sec[e + f*x]^(3/2)*(c + d*Sec[e + f*x])*Sqrt[(a + b - a*Tan[(e +
f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(1 + Tan[(e + f*x)/2]^2)]*(7*a^3*b*Sqrt[(
-a + b)/(a + b)]*c*Tan[(e + f*x)/2] + 7*a^2*b^2*Sqrt[(-a + b)/(a + b)]*c*Ta
n[(e + f*x)/2] - 3*a*b^3*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2] - 3*b^4*
Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2] - 4*a^4*Sqrt[(-a + b)/(a + b)]*d*
Tan[(e + f*x)/2] - 4*a^3*b*Sqrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/2] - 14*a
^3*b*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2]^3 + 6*a*b^3*Sqrt[(-a + b)/(a
 + b)]*c*Tan[(e + f*x)/2]^3 + 8*a^4*Sqrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/
2]^3 + 7*a^3*b*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2]^5 - 7*a^2*b^2*Sqrt
[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2]^5 - 3*a*b^3*Sqrt[(-a + b)/(a + b)]*c*
Tan[(e + f*x)/2]^5 + 3*b^4*Sqrt[(-a + b)/(a + b)]*c*Tan[(e + f*x)/2]^5 - 4*
a^4*Sqrt[(-a + b)/(a + b)]*d*Tan[(e + f*x)/2]^5 + 4*a^3*b*Sqrt[(-a + b)/(a
+ b)]*d*Tan[(e + f*x)/2]^5 - (6*I)*a^4*c*EllipticPi[-((a + b)/(a - b)), I*A
rcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Sqrt[1 -
Tan[(e + f*x)/2]^2]*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]
^2)/(a + b)] + (12*I)*a^2*b^2*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sq
rt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e +
f*x)/2]^2]*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a +
b)] - (6*I)*b^4*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a
 + b)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*Sqr
t[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] - (6*I)*a^
4*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e
+ f*x)/2]], (a + b)/(a - b)]*Tan[(e + f*x)/2]^2*Sqrt[1 - Tan[(e + f*x)/2]^2
```

```
]*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)] + (12
*I)*a^2*b^2*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a + b
)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Tan[(e + f*x)/2]^2*Sqrt[1 - Tan[(e +
 f*x)/2]^2]*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a +
 b)] - (6*I)*b^4*c*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(
a + b)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Tan[(e + f*x)/2]^2*Sqrt[1 - Tan
[(e + f*x)/2]^2]*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)
/(a + b)] + I*(a - b)*(-7*a^2*b*c + 3*b^3*c + 4*a^3*d)*EllipticE[I*ArcSinh[
Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e
+ f*x)/2]^2]*(1 + Tan[(e + f*x)/2]^2)*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 +
b*Tan[(e + f*x)/2]^2)/(a + b)] + I*(a - b)*(-4*a*b^2*c - 6*b^3*c + 3*a^3*(c
 - d) + a^2*b*(9*c + d))*EllipticF[I*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e
+ f*x)/2]], (a + b)/(a - b)]*Sqrt[1 - Tan[(e + f*x)/2]^2]*(1 + Tan[(e + f*x
)/2]^2)*Sqrt[(a + b - a*Tan[(e + f*x)/2]^2 + b*Tan[(e + f*x)/2]^2)/(a + b)]
))/(3*a^2*Sqrt[(-a + b)/(a + b)]*(a^2 - b^2)^2*f*(d + c*Cos[e + f*x])*(a +
b*Sec[e + f*x])^(5/2)*(-1 + Tan[(e + f*x)/2]^2)*Sqrt[(1 + Tan[(e + f*x)/2]^
2)/(1 - Tan[(e + f*x)/2]^2)]*(a*(-1 + Tan[(e + f*x)/2]^2) - b*(1 + Tan[(e +
 f*x)/2]^2)))
```

fricas [F] time = 1.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sec\left(fx+e\right)+a}\left(d\sec\left(fx+e\right)+c\right)}{b^3\sec\left(fx+e\right)^3+3\,ab^2\sec\left(fx+e\right)^2+3\,a^2b\sec\left(fx+e\right)+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c)/(b^3*sec(f*x + e)^3
+ 3*a*b^2*sec(f*x + e)^2 + 3*a^2*b*sec(f*x + e) + a^3), x)
```

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

$$\int \frac{d\sec\left(fx+e\right)+c}{\left(b\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*sec(f*x + e) + c)/(b*sec(f*x + e) + a)^(5/2), x)
```

maple [B] time = 1.81, size = 5710, normalized size = 11.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(5/2),x)
```

```
[Out] result too large to display
```

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

$$\int \frac{d\sec\left(fx+e\right)+c}{\left(b\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*sec(f*x + e) + c)/(b*sec(f*x + e) + a)^(5/2), x)
```

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

$$\int \frac{c+\frac{d}{\cos\left(e+f\,x\right)}}{{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))/(a + b/cos(e + f*x))^(5/2),x)
```

```
[Out] int((c + d/cos(e + f*x))/(a + b/cos(e + f*x))^(5/2), x)
```

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

$$\int \frac{c + d \sec{\left(e + f x \right)}}{\left(a + b \sec{\left(e + f x \right)}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))/(a+b*sec(f*x+e))**(5/2),x)
```

```
[Out] Integral((c + d*sec(e + f*x))/(a + b*sec(e + f*x))**(5/2), x)
```

3.207 $\int \sqrt{a+b\sec(e+fx)}\sqrt{c+d\sec(e+fx)}\,dx$

Optimal. Leaf size=389

$$\frac{2\cot(e+fx)(a+b\sec(e+fx))\sqrt{-\frac{(bc-ad)(1-\sec(e+fx))}{(c+d)(a+b\sec(e+fx))}}\sqrt{\frac{(bc-ad)(\sec(e+fx)+1)}{(c-d)(a+b\sec(e+fx))}}\,\Pi\left(\frac{b(c+d)}{(a+b)d};\sin^{-1}\left(\frac{\sqrt{\frac{a+b}{c+d}}\sqrt{c+d\sec(e+fx)}}{\sqrt{a+b\sec(e+fx)}}\right)\right|}{f\sqrt{\frac{a+b}{c+d}}}$$

```
[Out] 2*cot(f*x+e)*EllipticPi(((a+b)/(c+d))^(1/2)*(c+d*sec(f*x+e))^(1/2)/(a+b*sec
(f*x+e))^(1/2),b*(c+d)/(a+b)/d,((a-b)*(c+d)/(a+b)/(c-d))^(1/2))*(a+b*sec(f*
x+e))*(-(-a*d+b*c)*(1-sec(f*x+e))/(c+d)/(a+b*sec(f*x+e)))^(1/2)*((-a*d+b*c)
*(1+sec(f*x+e))/(c-d)/(a+b*sec(f*x+e)))^(1/2)/f/((a+b)/(c+d))^(1/2)-2*cot(f
*x+e)*EllipticPi((a+b)^(1/2)*(c+d*sec(f*x+e))^(1/2)/(c+d)^(1/2)/(a+b*sec(f*
x+e))^(1/2),a*(c+d)/(a+b)/c,((a-b)*(c+d)/(a+b)/(c-d))^(1/2))*(a+b*sec(f*x+e
))*(c+d)^(1/2)*(-(-a*d+b*c)*(1-sec(f*x+e))/(c+d)/(a+b*sec(f*x+e)))^(1/2)*((
-a*d+b*c)*(1+sec(f*x+e))/(c-d)/(a+b*sec(f*x+e)))^(1/2)/f/(a+b)^(1/2)
```

Rubi [A] time = 0.45, antiderivative size = 389, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$, Rules used = {3932, 3936, 3982}

$$\frac{2\cot(e+fx)(a+b\sec(e+fx))\sqrt{-\frac{(bc-ad)(1-\sec(e+fx))}{(c+d)(a+b\sec(e+fx))}}\sqrt{\frac{(bc-ad)(\sec(e+fx)+1)}{(c-d)(a+b\sec(e+fx))}}\,\Pi\left(\frac{b(c+d)}{(a+b)d};\sin^{-1}\left(\frac{\sqrt{\frac{a+b}{c+d}}\sqrt{c+d\sec(e+fx)}}{\sqrt{a+b\sec(e+fx)}}\right)\right|}{f\sqrt{\frac{a+b}{c+d}}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] (-2*Sqrt[c + d]*Cot[e + f*x]*EllipticPi[(a*(c + d))/((a + b)*c), ArcSin[(Sq
rt[a + b]*Sqrt[c + d*Sec[e + f*x]])/(Sqrt[c + d]*Sqrt[a + b*Sec[e + f*x]])]
, ((a - b)*(c + d))/((a + b)*(c - d))]*Sqrt[-(((b*c - a*d)*(1 - Sec[e + f*x
]))/((c + d)*(a + b*Sec[e + f*x])))]*Sqrt[((b*c - a*d)*(1 + Sec[e + f*x]))/
((c - d)*(a + b*Sec[e + f*x]))]*(a + b*Sec[e + f*x]))/(Sqrt[a + b]*f) + (2*
Cot[e + f*x]*EllipticPi[(b*(c + d))/((a + b)*d), ArcSin[(Sqrt[(a + b)/(c +
d)]*Sqrt[c + d*Sec[e + f*x]])/Sqrt[a + b*Sec[e + f*x]]], ((a - b)*(c + d))/
((a + b)*(c - d))]*Sqrt[-(((b*c - a*d)*(1 - Sec[e + f*x]))/((c + d)*(a + b*
Sec[e + f*x])))]*Sqrt[((b*c - a*d)*(1 + Sec[e + f*x]))/((c - d)*(a + b*Sec[
e + f*x]))]*(a + b*Sec[e + f*x]))/(Sqrt[(a + b)/(c + d)]*f)
```

Rule 3932

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Dist[c, Int[Sqrt[a + b*Csc[e + f*x]]/Sqrt[c +
d*Csc[e + f*x]], x], x] + Dist[d, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e + f*x]
])/Sqrt[c + d*Csc[e + f*x]], x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
b*c - a*d, 0]
```

Rule 3936

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Simp[(2*(a + b*Csc[e + f*x])*Sqrt[((b*c - a*d)
*(1 + Csc[e + f*x]))/((c - d)*(a + b*Csc[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1
 - Csc[e + f*x]))/((c + d)*(a + b*Csc[e + f*x])))]*EllipticPi[(a*(c + d))/(
c*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Csc[e + f*x]])/Sqrt[a
 + b*Csc[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(c*f*Rt[(a + b)/
(c + d), 2]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
```

```
a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3982

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/Sq
rt[csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)], x_Symbol] :> Simp[(-2*(a + b*Csc[
e + f*x])*Sqrt[-(((b*c - a*d)*(1 - Csc[e + f*x]))/((c + d)*(a + b*Csc[e + f
*x])))]*Sqrt[((b*c - a*d)*(1 + Csc[e + f*x]))/((c - d)*(a + b*Csc[e + f*x])
)]*EllipticPi[(b*(c + d))/(d*(a + b)), ArcSin[(Sqrt[(a + b)/(c + d)]*Sqrt[c
 + d*Csc[e + f*x]])/Sqrt[a + b*Csc[e + f*x]]], ((a - b)*(c + d))/((a + b)*(
c - d))])/(d*f*Sqrt[(a + b)/(c + d)]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d
, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \sqrt{a+b\sec(e+fx)}\sqrt{c+d\sec(e+fx)}\,dx = c\int \frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx + d\int \frac{\sec(e+fx)\sqrt{a+b\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}$$

$$= -\frac{2\sqrt{c+d}\,\cot(e+fx)\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}\right)|\frac{(a-b)(c+}{(a+b)(c-}\right.}{\sqrt{a+}}$$

Mathematica [C] time = 32.95, size = 39925, normalized size = 102.63

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + b*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] Result too large to show
```

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((a+b*sec(f*x+e))^(1/2)*(c+d*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \sqrt{b\sec\left(fx+e\right)+a}\,\sqrt{d\sec\left(fx+e\right)+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)*(c+d*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c), x)
```

maple [A] time = 2.29, size = 543, normalized size = 1.40

$$\frac{2\left(2\,\mathrm{EllipticPi}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},\frac{a+b}{a-b},\frac{\sqrt{\frac{c-d}{c+d}}}{\sqrt{\frac{a-b}{a+b}}}\right)bd+2\,\mathrm{EllipticPi}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},-\frac{a+b}{a-b},\frac{\sqrt{\frac{c-d}{c+d}}}{\sqrt{\frac{a-b}{a+b}}}\right)ac-\mathrm{EllipticF}\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(1/2)*(c+d*sec(f*x+e))^(1/2),x)
```

```
[Out] 2/f*(2*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),(a+b)/(a-b
),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*b*d+2*EllipticPi((-1+cos(f*x+e))
*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+
b))^(1/2))*a*c-EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a
+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*c+EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(
1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*d+EllipticF((-1+cos(f*x+
e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b*c-Ell
ipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c
+d))^(1/2))*b*d)*cos(f*x+e)*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*((d+c*cos(f
*x+e))/cos(f*x+e))^(1/2)*sin(f*x+e)^2*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d
))^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)/(-1+cos(f*x+e))/(d+c
*cos(f*x+e))/(b+a*cos(f*x+e))/((a-b)/(a+b))^(1/2)
```

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

$$\int \sqrt{b \sec \left(f x + e\right) + a} \sqrt{d \sec \left(f x + e\right) + c}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)*(c+d*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c), x)
```

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

$$\int \sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}\,\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2), x)
```

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

$$\int \sqrt{a + b \sec{\left(e + f x \right)}} \sqrt{c + d \sec{\left(e + f x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(1/2)*(c+d*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*sec(e + f*x))*sqrt(c + d*sec(e + f*x)), x)
```

3.208 $\int \frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx$

Optimal. Leaf size=198

$$-\frac{2\sqrt{c+d}\,\cot(e+fx)(a+b\sec(e+fx))\sqrt{-\frac{(bc-ad)(1-\sec(e+fx))}{(c+d)(a+b\sec(e+fx))}}\sqrt{\frac{(bc-ad)(\sec(e+fx)+1)}{(c-d)(a+b\sec(e+fx))}}\,\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}\right)\right.}{cf\sqrt{a+b}}$$

```
[Out] -2*cot(f*x+e)*EllipticPi((a+b)^(1/2)*(c+d*sec(f*x+e))^(1/2)/(c+d)^(1/2)/(a+
b*sec(f*x+e))^(1/2),a*(c+d)/(a+b)/c,((a-b)*(c+d)/(a+b)/(c-d))^(1/2))*(a+b*s
ec(f*x+e))*(c+d)^(1/2)*(-(-a*d+b*c)*(1-sec(f*x+e))/(c+d)/(a+b*sec(f*x+e)))^
(1/2)*((-a*d+b*c)*(1+sec(f*x+e))/(c-d)/(a+b*sec(f*x+e)))^(1/2)/c/f/(a+b)^(1
/2)
```

Rubi [A] time = 0.11, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.034$, Rules used = {3936}

$$-\frac{2\sqrt{c+d}\,\cot(e+fx)(a+b\sec(e+fx))\sqrt{-\frac{(bc-ad)(1-\sec(e+fx))}{(c+d)(a+b\sec(e+fx))}}\sqrt{\frac{(bc-ad)(\sec(e+fx)+1)}{(c-d)(a+b\sec(e+fx))}}\,\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}\right)\right.}{cf\sqrt{a+b}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Sec[e + f*x]]/Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] (-2*Sqrt[c + d]*Cot[e + f*x]*EllipticPi[(a*(c + d))/((a + b)*c), ArcSin[(Sq
rt[a + b]*Sqrt[c + d*Sec[e + f*x]])/(Sqrt[c + d]*Sqrt[a + b*Sec[e + f*x]])]
, ((a - b)*(c + d))/((a + b)*(c - d))]*Sqrt[-(((b*c - a*d)*(1 - Sec[e + f*x
]))/((c + d)*(a + b*Sec[e + f*x])))]*Sqrt[((b*c - a*d)*(1 + Sec[e + f*x]))/
((c - d)*(a + b*Sec[e + f*x]))]*(a + b*Sec[e + f*x]))/(Sqrt[a + b]*c*f)
```

Rule 3936

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Simp[(2*(a + b*Csc[e + f*x])*Sqrt[((b*c - a*d)
*(1 + Csc[e + f*x]))/((c - d)*(a + b*Csc[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1
 - Csc[e + f*x]))/((c + d)*(a + b*Csc[e + f*x])))]*EllipticPi[(a*(c + d))/(
c*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Csc[e + f*x]])/Sqrt[a
 + b*Csc[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(c*f*Rt[(a + b)/
(c + d), 2]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx = -\frac{2\sqrt{c+d}\,\cot(e+fx)\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}\right)|\frac{(a-b)(c+d)}{(a+b)(c-d)}\right)\sqrt{-\frac{(bc-ad)(1-\sec}{(c+d)(a+b\sec}}}{\sqrt{a+b}\,cf}$$

Mathematica [A] time = 5.87, size = 336, normalized size = 1.70

$$\frac{4\sin^2\left(\frac{1}{2}(e+fx)\right)\csc(e+fx)\sqrt{a+b\sec(e+fx)}\sqrt{\frac{(c+d)\cot^2\left(\frac{1}{2}(e+fx)\right)}{c-d}}\sqrt{\frac{(a+b)\csc^2\left(\frac{1}{2}(e+fx)\right)(c\cos(e+fx)+d)}{ad-bc}}\left(c(a+b)F\left(\sin\right.\right.}{cf(a+b)\sqrt{c+d\sec(e+fx)}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*Sec[e + f*x]]/Sqrt[c + d*Sec[e + f*x]],x]
```

```
[Out] (4*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((a + b)*(d + c*Cos[e +
f*x])*Csc[(e + f*x)/2]^2)/(-(b*c) + a*d)]*Csc[e + f*x]*((a + b)*c*EllipticF
[ArcSin[Sqrt[((a + b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(-(b*c) + a*
d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))] - a*(c + d)*EllipticPi[(b*
c - a*d)/(a*c + b*c), ArcSin[Sqrt[((a + b)*(d + c*Cos[e + f*x])*Csc[(e + f*
x)/2]^2)/(-(b*c) + a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))])*Sqrt
[a + b*Sec[e + f*x]]*Sin[(e + f*x)/2]^2)/((a + b)*c*f*Sqrt[((c + d)*(b + a*
Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[c + d*Sec[e + f*x]])
```

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((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{b\sec\left(fx+e\right)+a}}{\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/sqrt(d*sec(f*x + e) + c), x)
```

maple [A] time = 2.15, size = 352, normalized size = 1.78

$$\frac{2\left(2\,\mathrm{EllipticPi}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},-\frac{a+b}{a-b},\frac{\sqrt{\frac{c-d}{c+d}}}{\sqrt{\frac{a-b}{a+b}}}\right)a-\mathrm{EllipticF}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},\sqrt{\frac{(a+b)(c-d)}{(a-b)(c+d)}}\right)a+\mathrm{EllipticF}\left(\cdots\right.\right.}{f\left(-1+\cos\left(fx+e\right)\right)\left(\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x)
```

```
[Out] 2/f*(2*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-
b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*a-EllipticF((-1+cos(f*x+e))*((a
-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a+EllipticF((-
1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2
))*b)*cos(f*x+e)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*((b+a*cos(f*
x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*sin(f*x+e)^2*((b+a*cos(f*x+e))/cos(f*x+e)
)^(1/2)*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)/(-1+cos(f*x+e))/(d+c*cos(f*x+e)
)/(b+a*cos(f*x+e))/((a-b)/(a+b))^(1/2)
```

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

$$\int \frac{\sqrt{b\sec\left(fx+e\right)+a}}{\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/sqrt(d*sec(f*x + e) + c), x)
```

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

$$\int \frac{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}}{\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(1/2),x)
```

```
[Out] int((a + b/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{a+b\sec\left(e+fx\right)}}{\sqrt{c+d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*sec(e + f*x))/sqrt(c + d*sec(e + f*x)), x)
```

3.209 $\int \frac{\sqrt{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=598

$$-\frac{2\sqrt{c+d}\,\cot(e+fx)(a+b\sec(e+fx))\sqrt{-\frac{(bc-ad)(1-\sec(e+fx))}{(c+d)(a+b\sec(e+fx))}}\sqrt{\frac{(bc-ad)(\sec(e+fx)+1)}{(c-d)(a+b\sec(e+fx))}}\,\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{se}}}{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{se}}}\right.\right.}{c^2f\sqrt{a+b}}$$

```
[Out] -2*cot(f*x+e)*EllipticPi((a+b)^(1/2)*(c+d*sec(f*x+e))^(1/2)/(c+d)^(1/2)/(a+
b*sec(f*x+e))^(1/2),a*(c+d)/(a+b)/c,((a-b)*(c+d)/(a+b)/(c-d))^(1/2))*(a+b*s
ec(f*x+e))*(c+d)^(1/2)*(-(-a*d+b*c)*(1-sec(f*x+e))/(c+d)/(a+b*sec(f*x+e)))^
(1/2)*((-a*d+b*c)*(1+sec(f*x+e))/(c-d)/(a+b*sec(f*x+e)))^(1/2)/c^2/f/(a+b)^
(1/2)-2*d*cot(f*x+e)*EllipticE((c+d)^(1/2)*(a+b*sec(f*x+e))^(1/2)/(a+b)^(1/
2)/(c+d*sec(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(1+sec(f*x+e))*(
a+b)^(1/2)*((-a*d+b*c)*(1-sec(f*x+e))/(a+b)/(c+d*sec(f*x+e)))^(1/2)/c/(c-d)
/f/(c+d)^(1/2)/(-(-a*d+b*c)*(1+sec(f*x+e))/(a-b)/(c+d*sec(f*x+e)))^(1/2)-2*
(a-b)*d*cot(f*x+e)*EllipticF((c+d)^(1/2)*(a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2)
/(c+d*sec(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(c+d*sec(f*x+e))*(
a+b)^(1/2)*((-a*d+b*c)*(1-sec(f*x+e))/(a+b)/(c+d*sec(f*x+e)))^(1/2)*(-(-a*d
+b*c)*(1+sec(f*x+e))/(a-b)/(c+d*sec(f*x+e)))^(1/2)/c/(c-d)/(-a*d+b*c)/f/(c+
d)^(1/2)
```

Rubi [A] time = 0.90, antiderivative size = 598, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {3939, 3936, 3986, 3984, 3994}

$$-\frac{2\sqrt{c+d}\,\cot(e+fx)(a+b\sec(e+fx))\sqrt{-\frac{(bc-ad)(1-\sec(e+fx))}{(c+d)(a+b\sec(e+fx))}}\sqrt{\frac{(bc-ad)(\sec(e+fx)+1)}{(c-d)(a+b\sec(e+fx))}}\,\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\,\mathrm{se}}}{\sqrt{c+d}\,\sqrt{a+b\,\mathrm{se}}}\right.\right.}{c^2f\sqrt{a+b}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Sec[e + f*x]]/(c + d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (-2*Sqrt[c + d]*Cot[e + f*x]*EllipticPi[(a*(c + d))/((a + b)*c), ArcSin[(Sq
rt[a + b]*Sqrt[c + d*Sec[e + f*x]])/(Sqrt[c + d]*Sqrt[a + b*Sec[e + f*x]])]
, ((a - b)*(c + d))/((a + b)*(c - d))]*Sqrt[-(((b*c - a*d)*(1 - Sec[e + f*x
]))/((c + d)*(a + b*Sec[e + f*x])))]*Sqrt[((b*c - a*d)*(1 + Sec[e + f*x]))/
((c - d)*(a + b*Sec[e + f*x]))]*(a + b*Sec[e + f*x]))/(Sqrt[a + b]*c^2*f) -
 (2*Sqrt[a + b]*d*Cot[e + f*x]*EllipticE[ArcSin[(Sqrt[c + d]*Sqrt[a + b*Sec
[e + f*x]])/(Sqrt[a + b]*Sqrt[c + d*Sec[e + f*x]])], ((a + b)*(c - d))/((a
- b)*(c + d))]*(1 + Sec[e + f*x])*Sqrt[((b*c - a*d)*(1 - Sec[e + f*x]))/((a
 + b)*(c + d*Sec[e + f*x]))]])/(c*(c - d)*Sqrt[c + d]*f*Sqrt[-(((b*c - a*d)*
(1 + Sec[e + f*x]))/((a - b)*(c + d*Sec[e + f*x])))]) - (2*(a - b)*Sqrt[a +
 b]*d*Cot[e + f*x]*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[a + b*Sec[e + f*x]])/
(Sqrt[a + b]*Sqrt[c + d*Sec[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d)
)]*Sqrt[((b*c - a*d)*(1 - Sec[e + f*x]))/((a + b)*(c + d*Sec[e + f*x]))]*Sq
rt[-(((b*c - a*d)*(1 + Sec[e + f*x]))/((a - b)*(c + d*Sec[e + f*x])))]*(c +
 d*Sec[e + f*x]))/(c*(c - d)*Sqrt[c + d]*(b*c - a*d)*f)
```

Rule 3936

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Simp[(2*(a + b*Csc[e + f*x])*Sqrt[((b*c - a*d)
*(1 + Csc[e + f*x]))/((c - d)*(a + b*Csc[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1
 - Csc[e + f*x]))/((c + d)*(a + b*Csc[e + f*x])))]*EllipticPi[(a*(c + d))/(
c*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Csc[e + f*x]])/Sqrt[a
```

```
 + b*Csc[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(c*f*Rt[(a + b)/
(c + d), 2]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3939

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/(csc[(e_.) + (f_.)*(x_)]*(d_
.) + (c_))^(3/2), x_Symbol] :> Dist[1/c, Int[Sqrt[a + b*Csc[e + f*x]]/Sqrt[
c + d*Csc[e + f*x]], x], x] - Dist[d/c, Int[(Csc[e + f*x]*Sqrt[a + b*Csc[e
+ f*x]])/(c + d*Csc[e + f*x])^(3/2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && NeQ[b*c - a*d, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3984

```
Int[csc[(e_.) + (f_.)*(x_)]/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqr
t[csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)]), x_Symbol] :> Simp[(-2*(c + d*Csc[
e + f*x])*Sqrt[((b*c - a*d)*(1 - Csc[e + f*x]))/((a + b)*(c + d*Csc[e + f*x
]))]*Sqrt[-(((b*c - a*d)*(1 + Csc[e + f*x]))/((a - b)*(c + d*Csc[e + f*x]))
)]*EllipticF[ArcSin[Rt[(c + d)/(a + b), 2]*(Sqrt[a + b*Csc[e + f*x]]/Sqrt[c
 + d*Csc[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*
Rt[(c + d)/(a + b), 2]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3986

```
Int[(csc[(e_.) + (f_.)*(x_)]*Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)])/(c
sc[(e_.) + (f_.)*(x_)]*(d_.) + (c_))^(3/2), x_Symbol] :> Dist[(a - b)/(c -
d), Int[Csc[e + f*x]/(Sqrt[a + b*Csc[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), x
], x] + Dist[(b*c - a*d)/(c - d), Int[(Csc[e + f*x]*(1 + Csc[e + f*x]))/(Sq
rt[a + b*Csc[e + f*x]]*(c + d*Csc[e + f*x])^(3/2)), x], x] /; FreeQ[{a, b,
c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2,
 0]
```

Rule 3994

```
Int[(sec[(e_.) + (f_.)*(x_)]*((A_) + (B_.)*sec[(e_.) + (f_.)*(x_)]))/(Sqrt[
(a_) + (b_.)*sec[(e_.) + (f_.)*(x_)]]*((c_) + (d_.)*sec[(e_.) + (f_.)*(x_)]
)^(3/2)), x_Symbol] :> Simp[(2*A*(1 + Sec[e + f*x])*Sqrt[((b*c - a*d)*(1 -
Sec[e + f*x]))/((a + b)*(c + d*Sec[e + f*x]))]*EllipticE[ArcSin[(Rt[(c + d)
/(a + b), 2]*Sqrt[a + b*Sec[e + f*x]])/Sqrt[c + d*Sec[e + f*x]]], ((a + b)*
(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*Tan[e +
f*x]*Sqrt[-(((b*c - a*d)*(1 + Sec[e + f*x]))/((a - b)*(c + d*Sec[e + f*x]))
)]), x] /; FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a
^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && EqQ[A, B]
```

Rubi steps

$$\int \frac{\sqrt{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{3/2}}\,dx = \frac{\int \frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx}{c} - \frac{d\int \frac{\sec(e+fx)\sqrt{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{3/2}}\,dx}{c}$$

$$= -\frac{2\sqrt{c+d}\,\cot(e+fx)\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}\right)|\frac{(a-b)(c+d)}{(a+b)(c-d)}\right)\sqrt{-\frac{(bc-ad)(}{(c+d)(a-}}}{\sqrt{a+b}\,c^2f}$$

$$= -\frac{2\sqrt{c+d}\,\cot(e+fx)\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}\right)|\frac{(a-b)(c+d)}{(a+b)(c-d)}\right)\sqrt{-\frac{(bc-ad)(}{(c+d)(a-}}}{\sqrt{a+b}\,c^2f}$$

Mathematica [B] time = 9.28, size = 1708, normalized size = 2.86

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + b*Sec[e + f*x]]/(c + d*Sec[e + f*x])^(3/2),x]
```

```
[Out] ((d + c*Cos[e + f*x])^(3/2)*Sec[e + f*x]*Sqrt[a + b*Sec[e + f*x]]*((4*b*c*(
b*c - a*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*
Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e
+ f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt
[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]],
(2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqr
t[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) + 4*(b*c - a*d)*(a*c + b*d)
*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e +
f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*
Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a -
b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c
- a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*
Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[((c + d)*Cot[(e + f*x)/2]^2
)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*
d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Cs
c[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*(d + c
*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/(
(a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f*x]]*S
qrt[d + c*Cos[e + f*x]])) + 2*a*d*((Sqrt[(-a + b)/(a + b)]*(a + b)*Cos[(e +
 f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[ArcSin[(Sqrt[(-a + b)/(a + b)]*
Sin[(e + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(a + b)]], (2*(b*c - a*d))/((-a
 + b)*(c + d))])/(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]^2)/(b + a*Cos[e + f*x]
)]*Sqrt[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e + f*x])/(a + b)]*Sqrt[((a + b
)*(d + c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e + f*x]))]) - (2*(b*c - a*d)*(
((b*c + (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)
*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d +
c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[Arc
Sin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sq
rt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c
+ d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - ((b*c + a*d)*Sqrt
[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*C
sc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e
+ f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c),
ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]
/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*
c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])))/(a*c) + (Sqrt[d + c*
Cos[e + f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos[e + f*x]]))))/((c - d)*(c + d
```

```
)*f*Sqrt[b + a*Cos[e + f*x]]*(c + d*Sec[e + f*x])^(3/2)) + (2*d*(d + c*Cos[
e + f*x])*Sqrt[a + b*Sec[e + f*x]]*Tan[e + f*x])/((-c^2 + d^2)*f*(c + d*Sec
[e + f*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((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{b \sec\left(fx+e\right)+a}}{\left(d \sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/(d*sec(f*x + e) + c)^(3/2), x)
```

maple [B] time = 2.69, size = 2847, normalized size = 4.76

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x)
```

```
[Out] 2/f*(sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x
+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1
/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*c^2+sin(f*x+e)*cos(f*x+e)
*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x
+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),
((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*c*d-cos(f*x+e)^2*((a-b)/(a+b))^(1/2)*a*d
^2+cos(f*x+e)*((a-b)/(a+b))^(1/2)*a*d^2-cos(f*x+e)*((a-b)/(a+b))^(1/2)*b*d^
2-sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c
*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(
a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b*c*d-sin(f*x+e)*co
s(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1
+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin
(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*c*d+sin(f*x+e)*cos(f*x+e)*((b+a*
cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c
+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*
(c-d)/(a-b)/(c+d))^(1/2))*b*c*d-b*c*d*((a-b)/(a+b))^(1/2)+b*d^2*((a-b)/(a+b
))^(1/2)+2*sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*c
os(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a
+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))
*a*d^2+cos(f*x+e)^2*((a-b)/(a+b))^(1/2)*a*c*d-cos(f*x+e)*((a-b)/(a+b))^(1/2
)*a*c*d+cos(f*x+e)*((a-b)/(a+b))^(1/2)*b*c*d+sin(f*x+e)*cos(f*x+e)*((b+a*co
s(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d
))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c
-d)/(a-b)/(c+d))^(1/2))*a*c^2-sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+co
s(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*Ellipt
icF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d)
```

```
)^(1/2))*b*c^2-sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b)
)^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x
+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*d^2+
sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*c
os(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+
b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b*d^2-2*sin(f*x+e)*co
s(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1
+cos(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/si
n(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*a*c^2+2*sin(
f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f
*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))
^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*a*d
^2+EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a
-b)/(c+d))^(1/2))*a*c*d*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c
*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)-sin(f*x+e)*((b+a*cos(f*
x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(
1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/
(a-b)/(c+d))^(1/2))*b*c*d-sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b)
)^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x
+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*c*d+
sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/
(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/s
in(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b*c*d+sin(f*x+e)*((b+a*cos(f*x+e
))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2
)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-
b)/(c+d))^(1/2))*b*d^2-2*sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))
^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x
+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)
/(a+b))^(1/2))*a*c^2-sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/
2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*x+e))*
((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b*c^2-sin(f
*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+co
s(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*
x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*d^2)*cos(f*x+e)*((b+a*cos(f*x+e))/c
os(f*x+e))^(1/2)*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/(d+c*cos(f*
x+e))/(b+a*cos(f*x+e))/c/(c+d)/(c-d)/((a-b)/(a+b))^(1/2)
```

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

$$\int \frac{\sqrt{b \sec\left(fx+e\right)+a}}{\left(d \sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/(d*sec(f*x + e) + c)^(3/2), x)
```

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

$$\int \frac{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}}{{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + b/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\sqrt{a + b \sec{\left(e + f x \right)}}}{\left(c + d \sec{\left(e + f x \right)}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral(sqrt(a + b*sec(e + f*x))/(c + d*sec(e + f*x))**(3/2), x)
```

3.210 $\int \frac{\sqrt{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=899

$$\frac{2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)d^2}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}}+\frac{2(a-b)\sqrt{a+b}\left(6bc^3-7adc^2-2bd^2c+3ad^3\right)\sqrt{-\frac{(bc-ad}{(a+b)(}}}{}$$

```
[Out] 2/3*d^2*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c/(c^2-d^2)/f/(d+c*cos(f*x+e))/(c
+d*sec(f*x+e))^(1/2)+2/3*(a-b)*d*(-7*a*c^2*d+3*a*d^3+6*b*c^3-2*b*c*d^2)*(d+
c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticE((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)
/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^
(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c
)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^2/(
c-d)^2/(c+d)^(3/2)/(-a*d+b*c)^2/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(
1/2)+2/3*(b*c^2*(3*c^2+3*c*d-2*d^2)-a*d*(9*c^3-2*c^2*d-6*c*d^2+3*d^3))*(d+c
*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticF((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/
(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(
1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)
*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^3/(c
-d)^2/(c+d)^(3/2)/(-a*d+b*c)/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2
)-2*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticPi((c+d)^(1/2)*(b+a*cos(f*x+e
))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),(a+b)*c/a/(c+d),((a+b)*(c-d)/(a
-b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*
x+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b
*sec(f*x+e))^(1/2)/c^3/f/(c+d)^(1/2)/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e)
)^(1/2)
```

Rubi [A] time = 2.26, antiderivative size = 899, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.241$, Rules used = {3942, 3048, 3053, 2811, 2998, 2818, 2996}

$$\frac{2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)d^2}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}}+\frac{2(a-b)\sqrt{a+b}\left(6bc^3-7adc^2-2bd^2c+3ad^3\right)\sqrt{-\frac{(bc-ad}{(a+b)(}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*Sec[e + f*x]]/(c + d*Sec[e + f*x])^(5/2),x]
```

```
[Out] (2*(a - b)*Sqrt[a + b]*d*(6*b*c^3 - 7*a*c^2*d - 2*b*c*d^2 + 3*a*d^3)*Sqrt[-
(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-((
(b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos
[e + f*x])^(3/2)*Csc[e + f*x]*EllipticE[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[
e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a -
 b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(3*c^2*(c - d)^2*(c + d)^(3/2)*(b*c
 - a*d)^2*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) + (2*Sqrt[a
+ b]*(b*c^2*(3*c^2 + 3*c*d - 2*d^2) - a*d*(9*c^3 - 2*c^2*d - 6*c*d^2 + 3*d^
3))*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))
]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*
(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[
b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c -
 d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(3*c^3*(c - d)^2*(c + d)^
(3/2)*(b*c - a*d)*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2
*Sqrt[a + b]*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e
+ f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e +
f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticPi[((a + b)*c)/(a*
(c + d)), ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d
```

```
+ c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e
 + f*x]])/(c^3*Sqrt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*
x]]) + (2*d^2*Sqrt[a + b*Sec[e + f*x]]*Sin[e + f*x])/(3*c*(c^2 - d^2)*f*(d
+ c*Cos[e + f*x])*Sqrt[c + d*Sec[e + f*x]])
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && NeQ[A, B]
```

Rule 3048

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
-Simp[((c^2*C + A*d^2)*Cos[e + f*x]*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f
*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)
), Int[(a + b*Sin[e + f*x])^(m - 1)*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(
b*d*m + a*c*(n + 1)) + c*C*(b*c*m + a*d*(n + 1)) - (A*d*(a*d*(n + 2) - b*c*
(n + 1)) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] - b*(A*d
^2*(m + n + 2) + C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x]
/; FreeQ[{a, b, c, d, e, f, A, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2
```

```
, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3053

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(3/2)*Sqrt[(c_.) + (d_.)*sin[(e
_.) + (f_.)*(x_)]]), x_Symbol] :> Dist[C/b^2, Int[Sqrt[a + b*Sin[e + f*x]]/
Sqrt[c + d*Sin[e + f*x]], x], x] + Dist[1/b^2, Int[(A*b^2 - a^2*C + b*(b*B
- 2*a*C)*Sin[e + f*x])/((a + b*Sin[e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]
), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{\sqrt{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{5/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{\cos^2(e+fx)\sqrt{b+a\cos(e+fx)}}{(d+c\cos(e+fx))^{5/2}}\,dx}{\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}}$$

$$= \frac{2d^2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}} + \frac{\left(2\sqrt{d+c\cos(e+fx)}\,\sqrt{a\right.}{}$$

$$= \frac{2d^2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}} + \frac{\left(a\sqrt{d+c\cos(e+fx)}\,\sqrt{a\right.}{c^3\sqrt{b+a\cos(e}}$$

$$= -\frac{2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(}{c^3\sqrt{c+d}\,f\sqrt{b+a\cos(e+}}$$

$$= \frac{2(a-b)\sqrt{a+b}\,d\left(6bc^3-7ac^2d-2bcd^2+3ad^3\right)\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)}{(a-b)(}}}{3c^2(c-d)^2(c+d)^{3/2}(bc}$$

Mathematica [B] time = 6.90, size = 1990, normalized size = 2.21

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + b*Sec[e + f*x]]/(c + d*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((d + c*Cos[e + f*x])^3*Sec[e + f*x]^2*Sqrt[a + b*Sec[e + f*x]]*((2*d^2*Sin
[e + f*x])/(3*c*(c^2 - d^2)*(d + c*Cos[e + f*x])^2) - (2*(6*b*c^3*d*Sin[e +
 f*x] - 7*a*c^2*d^2*Sin[e + f*x] - 2*b*c*d^3*Sin[e + f*x] + 3*a*d^4*Sin[e +
 f*x]))/(3*c*(b*c - a*d)*(c^2 - d^2)^2*(d + c*Cos[e + f*x])))))/(f*(c + d*Se
c[e + f*x])^(5/2)) + ((d + c*Cos[e + f*x])^(5/2)*Sec[e + f*x]^2*Sqrt[a + b*
Sec[e + f*x]]*((4*(b*c - a*d)*(3*b^2*c^4 - 3*a*b*c^3*d - a^2*c^2*d^2 + b^2*
```

```
c^2*d^2 - a*b*c*d^3 + a^2*d^4)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*S
qrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-
a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*E
llipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*
c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/
((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) + 4*(b*
c - a*d)*(3*a*b*c^4 - 3*a^2*c^3*d + 6*b^2*c^3*d - 7*a*b*c^2*d^2 - a^2*c*d^3
 - 2*b^2*c*d^3 + 4*a*b*d^4)*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sq
rt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a
 - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*El
lipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c
 - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/(
(a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[
((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Cs
c[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e +
 f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), A
rcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/
Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c
*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])) + 2*(6*a*b*c^3*d - 7*a
^2*c^2*d^2 - 2*a*b*c*d^3 + 3*a^2*d^4)*((Sqrt[(-a + b)/(a + b)]*(a + b)*Cos[
(e + f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[ArcSin[(Sqrt[(-a + b)/(a +
b)]*Sin[(e + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(a + b)]], (2*(b*c - a*d))/
((-a + b)*(c + d))])/(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]^2)/(b + a*Cos[e +
f*x])]*Sqrt[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e + f*x])/(a + b)]*Sqrt[((a
 + b)*(d + c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e + f*x]))]) - (2*(b*c - a*
d)*(((b*c + (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c
+ d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(
d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF
[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)
]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)
*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - ((b*c + a*d)*
Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x
])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc
[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*
c), ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a
*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a +
 b)*c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])))/(a*c) + (Sqrt[d
+ c*Cos[e + f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos[e + f*x]]))))/(3*c*(c - d
)^2*(c + d)^2*(b*c - a*d)*f*Sqrt[b + a*Cos[e + f*x]]*(c + d*Sec[e + f*x])^(
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((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{b \sec\left(fx+e\right)+a}}{\left(d \sec\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/(d*sec(f*x + e) + c)^(5/2), x)
```

maple [**B**] time = 3.08, size = 15724, normalized size = 17.49

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(5/2),x)
```

```
[Out] result too large to display
```

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

$$\int \frac{\sqrt{b\sec\left(fx+e\right)+a}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] integrate(sqrt(b*sec(f*x + e) + a)/(d*sec(f*x + e) + c)^(5/2), x)
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(1/2)/(c + d/cos(e + f*x))^(5/2),x)
```

```
[Out] \text{Hanged}
```

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

$$\int \frac{\sqrt{a+b\sec\left(e+fx\right)}}{\left(c+d\sec\left(e+fx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(1/2)/(c+d*sec(f*x+e))**(5/2),x)
```

```
[Out] Integral(sqrt(a + b*sec(e + f*x))/(c + d*sec(e + f*x))**(5/2), x)
```

3.211 $\int \frac{(a+b\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=744

$$-\frac{2\sqrt{a+b}\,(bc-a(2c-d))\csc(e+fx)\sqrt{a+b\sec(e+fx)}\,(c\cos(e+fx)+d)^{3/2}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(c\cos(e+fx)+d)}}\sqrt{-\frac{(bc-ad)(\cos}{(a-b)(c\cos(}}}{c^2f(c-d)\sqrt{c+d}\,\sqrt{a\cos(e+fx)+b}\,\sqrt{c+d\sec(e+fx)}}$$

```
[Out] -2*(a-b)*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticE((c+d)^(1/2)*(b+a*cos(f
*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(
1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)
*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))
^(1/2)/c/(c-d)/f/(c+d)^(1/2)/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)-
2*(b*c-a*(2*c-d))*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticF((c+d)^(1/2)*(
b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)
/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e
)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*se
c(f*x+e))^(1/2)/c^2/(c-d)/f/(c+d)^(1/2)/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x
+e))^(1/2)-2*a*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticPi((c+d)^(1/2)*(b+
a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),(a+b)*c/a/(c+d),((a+
b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/
(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))
^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^2/f/(c+d)^(1/2)/(b+a*cos(f*x+e))^(1/2)/(c+d
*sec(f*x+e))^(1/2)
```

Rubi [A] time = 1.11, antiderivative size = 744, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {3942, 2798, 2811, 2998, 2818, 2996}

$$-\frac{2\sqrt{a+b}\,(bc-a(2c-d))\csc(e+fx)\sqrt{a+b\sec(e+fx)}\,(c\cos(e+fx)+d)^{3/2}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(c\cos(e+fx)+d)}}\sqrt{-\frac{(bc-ad)(\cos}{(a-b)(c\cos(}}}{c^2f(c-d)\sqrt{c+d}\,\sqrt{a\cos(e+fx)+b}\,\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (-2*(a - b)*Sqrt[a + b]*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d
 + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d +
 c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticE[ArcSi
n[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*
x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(c*(c
 - d)*Sqrt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2
*Sqrt[a + b]*(b*c - a*(2*c - d))*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((
a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a
- b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*Ellipt
icF[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*C
os[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x
]])/(c^2*(c - d)*Sqrt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e +
f*x]]) - (2*a*Sqrt[a + b]*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*
(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d
 + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticPi[((
a + b)*c)/(a*(c + d)), ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[
a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqr
t[a + b*Sec[e + f*x]])/(c^2*Sqrt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c +
 d*Sec[e + f*x]])
```

Rule 2798

```
Int[((c_) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(3/2)/((a_.) + (b_.)*sin[(e_.) +
 (f_.)*(x_)])^(3/2), x_Symbol] :> Dist[d^2/b^2, Int[Sqrt[a + b*Sin[e + f*x]
]/Sqrt[c + d*Sin[e + f*x]], x], x] + Dist[(b*c - a*d)/b^2, Int[Simp[b*c + a
*d + 2*b*d*Sin[e + f*x], x]/((a + b*Sin[e + f*x])^(3/2)*Sqrt[c + d*Sin[e +
f*x]]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[
a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && NeQ[A, B]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^{3/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{(b+a\cos(e+fx))^{3/2}}{(d+c\cos(e+fx))^{3/2}}\,dx}{\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}}$$

$$= \frac{\left(a^2\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{\sqrt{d+c\cos(e+fx)}}{\sqrt{b+a\cos(e+fx)}}\,dx}{c^2\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}} + \frac{\left((bc-ad)\sqrt{d+c\right.}{}$$

$$= -\frac{2a\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}\,(d+c\cos(e+fx))^{3/2}\csc(e}{c^2\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}}$$

$$= -\frac{2(a-b)\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}\,(d+c\cos(e+fx))^{3/2}\,c}{c(c-d)\sqrt{c+d}\,f\sqrt{b+a\cos(e+f}}$$

Mathematica [B] time = 9.72, size = 1750, normalized size = 2.35

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^(3/2),x]
```

```
[Out] (2*(d + c*Cos[e + f*x])*(a + b*Sec[e + f*x])^(3/2)*(-(b*c*Sin[e + f*x]) + a
*d*Sin[e + f*x]))/((-c^2 + d^2)*f*(b + a*Cos[e + f*x])*(c + d*Sec[e + f*x])
^(3/2)) + ((d + c*Cos[e + f*x])^(3/2)*(a + b*Sec[e + f*x])^(3/2)*((4*(b*c -
 a*d)*(a*b*c - b^2*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c +
 d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d
 + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[
ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]
/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*
(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) + 4*(a^2*c - b^2
*c)*(b*c - a*d)*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*
(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c
*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcS
in[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqr
t[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c +
 d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[((c + d)*Cot
[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/
2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/
(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin[Sqrt[(
(-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2
*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt[b + a*
Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])) + 2*(-(a*b*c) + a^2*d)*((Sqrt[(-a
+ b)/(a + b)]*(a + b)*Cos[(e + f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[A
rcSin[(Sqrt[(-a + b)/(a + b)]*Sin[(e + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(
a + b)]], (2*(b*c - a*d))/((-a + b)*(c + d))])/(a*c*Sqrt[((a + b)*Cos[(e +
f*x)/2]^2)/(b + a*Cos[e + f*x])]*Sqrt[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e
 + f*x])/(a + b)]*Sqrt[((a + b)*(d + c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e
 + f*x]))]) - (2*(b*c - a*d)*(((b*c + (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x
)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*
c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*
d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(
e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Si
```

```
n[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[
e + f*x]]) - ((b*c + a*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[(
(c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b
)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*Ellipt
icPi[(b*c - a*d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Cs
c[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]
*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e +
 f*x]])))/(a*c) + (Sqrt[d + c*Cos[e + f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos
[e + f*x]])))/((c - d)*(c + d)*f*(b + a*Cos[e + f*x])^(3/2)*(c + d*Sec[e +
 f*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((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c)^(3/2), x)
```

maple [B] time = 2.10, size = 4298, normalized size = 5.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(3/2),x)
```

```
[Out] 2/f*(b^2*c^2*((a-b)/(a+b))^(1/2)-sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e)
)/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+
cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))
*b^2*c^2-2*sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*c
os(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a
+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))
*a^2*c^2+2*sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*c
os(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a
+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))
*a^2*d^2+((a-b)/(a+b))^(1/2)*cos(f*x+e)^2*a*b*c*d-((a-b)/(a+b))^(1/2)*cos(f
*x+e)*b^2*c^2-((a-b)/(a+b))^(1/2)*cos(f*x+e)^2*a^2*d^2+((a-b)/(a+b))^(1/2)*
cos(f*x+e)*a^2*d^2+sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(
a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+cos
(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a^
2*c*d+sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*
x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(
1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b^2*c^2-2*sin(f*x+e)*cos(f
*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+co
```

```
s(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f
*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*a^2*c^2+2*sin(f
*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*
x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^
(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*a^2*
d^2+EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(
a-b)/(c+d))^(1/2))*a^2*c*d*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((
d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)-2*EllipticF((-1+cos(
f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*b
*c^2*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos
(f*x+e))/(c+d))^(1/2)*sin(f*x+e)+a*b*d^2*((a-b)/(a+b))^(1/2)-b^2*c*d*((a-b)
/(a+b))^(1/2)-2*sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b
))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*
x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*b*c
*d+2*sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((
d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b
)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*b*c*d-((a-b)/(
a+b))^(1/2)*cos(f*x+e)^2*a*b*c^2-((a-b)/(a+b))^(1/2)*cos(f*x+e)*a^2*c*d+((a
-b)/(a+b))^(1/2)*cos(f*x+e)*a*b*c^2-((a-b)/(a+b))^(1/2)*cos(f*x+e)*a*b*d^2+
((a-b)/(a+b))^(1/2)*cos(f*x+e)*b^2*c*d+((a-b)/(a+b))^(1/2)*cos(f*x+e)^2*a^2
*c*d-sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x
+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1
/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a^2*d^2+2*EllipticE((-1+cos
(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*
b*c*d*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+co
s(f*x+e))/(c+d))^(1/2)*sin(f*x+e)-2*sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))
/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*
EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)
/(c+d))^(1/2))*a*b*c^2+sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e
))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1
+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2)
)*b^2*c*d-sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/
2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*
((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a^2*c*d+sin
(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(
f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))
^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*b*c^2+sin(f*x+e)*cos(f
*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+co
s(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*
x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*b*d^2-sin(f*x+e)*cos(f*x+e)*((b+a*c
os(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+
d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(
c-d)/(a-b)/(c+d))^(1/2))*b^2*c*d-2*sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+
e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-
1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2
))*a*b*c*d-a*b*c*d*((a-b)/(a+b))^(1/2)+sin(f*x+e)*((b+a*cos(f*x+e))/(1+cos(
f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*Elliptic
F((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^
(1/2))*a^2*c^2+EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a
+b)*(c-d)/(a-b)/(c+d))^(1/2))*b^2*c*d*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b
))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)-EllipticE
((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(
1/2))*a^2*c*d*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e
))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)+EllipticE((-1+cos(f*x+e))*((a-b)/
(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*b*c^2*((b+a*cos(
f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))
^(1/2)*sin(f*x+e)+EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),
((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a*b*d^2*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(
a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)-Ellipt
```

```
icE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d)
)^(1/2))*b^2*c*d*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*
x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)+sin(f*x+e)*cos(f*x+e)*((b+a*co
s(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d
))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c
-d)/(a-b)/(c+d))^(1/2))*a^2*c^2+sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+
cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*Elli
pticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+
d))^(1/2))*b^2*c^2-sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(
a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos
(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*a^
2*d^2-sin(f*x+e)*cos(f*x+e)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*(
(d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-
b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b^2*c^2)*cos(f*
x+e)*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2
)/sin(f*x+e)/(d+c*cos(f*x+e))/(b+a*cos(f*x+e))/c/(c-d)/((a-b)/(a+b))^(1/2)/
(c+d)
```

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

$$\int \frac{\left(b \sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(d \sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(3/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c)^(3/2), x)
```

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

$$\int \frac{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{3/2}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^(3/2),x)
```

```
[Out] int((a + b/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^(3/2), x)
```

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

$$\int \frac{\left(a+b \sec\left(e+fx\right)\right)^{\frac{3}{2}}}{\left(c+d \sec\left(e+fx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e))**(3/2),x)
```

```
[Out] Integral((a + b*sec(e + f*x))**(3/2)/(c + d*sec(e + f*x))**(3/2), x)
```

3.212 $\int \frac{(a+b\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=919

$$-\frac{2(a-b)\sqrt{a+b}\left(3bc^3-7adc^2+bd^2c+3ad^3\right)\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}\csc(e+fx)E\left(\sin^{-1}\left(\cdots\right.\right.}{3c^2(c-d)^2(c+d)^{3/2}(bc-ad)f\sqrt{b+a\cos(e+fx)}\sqrt{c+\cdots}}$$

```
[Out] -2/3*d*(-a*d+b*c)*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c/(c^2-d^2)/f/(d+c*cos(
f*x+e))/(c+d*sec(f*x+e))^(1/2)-2/3*(a-b)*(-7*a*c^2*d+3*a*d^3+3*b*c^3+b*c*d^
2)*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticE((c+d)^(1/2)*(b+a*cos(f*x+e))
^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*
(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a
*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)
/c^2/(c-d)^2/(c+d)^(3/2)/(-a*d+b*c)/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e
))^(1/2)-2/3*(b^2*c^3*(3*c+d)-2*a*b*c^2*(3*c^2+2*c*d-d^2)+a^2*d*(9*c^3-2*c^
2*d-6*c*d^2+3*d^3))*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticF((c+d)^(1/2)
*(b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-
b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x
+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*
sec(f*x+e))^(1/2)/c^3/(c-d)^2/(c+d)^(3/2)/(-a*d+b*c)/f/(b+a*cos(f*x+e))^(1/
2)/(c+d*sec(f*x+e))^(1/2)-2*a*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticPi(
(c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),(a+b)
*c/a/(c+d),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos
(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d
+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^3/f/(c+d)^(1/2)/(b+a*cos(f*x
+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 2.13, antiderivative size = 919, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.241$, Rules used = {3942, 2989, 3053, 2811, 2998, 2818, 2996}

$$-\frac{2(a-b)\sqrt{a+b}\left(3bc^3-7adc^2+bd^2c+3ad^3\right)\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}\csc(e+fx)E\left(\sin^{-1}\left(\cdots\right.\right.}{3c^2(c-d)^2(c+d)^{3/2}(bc-ad)f\sqrt{b+a\cos(e+fx)}\sqrt{c+\cdots}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^(5/2),x]
```

```
[Out] (-2*(a - b)*Sqrt[a + b]*(3*b*c^3 - 7*a*c^2*d + b*c*d^2 + 3*a*d^3)*Sqrt[-(((
b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*
c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e
+ f*x])^(3/2)*Csc[e + f*x]*EllipticE[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e +
 f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)
*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(3*c^2*(c - d)^2*(c + d)^(3/2)*(b*c -
a*d)*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2*Sqrt[a + b]*
(b^2*c^3*(3*c + d) - 2*a*b*c^2*(3*c^2 + 2*c*d - d^2) + a^2*d*(9*c^3 - 2*c^2
*d - 6*c*d^2 + 3*d^3))*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d
+ c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d +
c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticF[ArcSin
[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x
]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(3*c^3
*(c - d)^2*(c + d)^(3/2)*(b*c - a*d)*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*
Sec[e + f*x]]) - (2*a*Sqrt[a + b]*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/(
(a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a
 - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*Ellip
ticPi[((a + b)*c)/(a*(c + d)), ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]]
```

```
)/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c +
d))]*Sqrt[a + b*Sec[e + f*x]])/(c^3*Sqrt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*
Sqrt[c + d*Sec[e + f*x]]) - (2*d*(b*c - a*d)*Sqrt[a + b*Sec[e + f*x]]*Sin[e
 + f*x])/(3*c*(c^2 - d^2)*f*(d + c*Cos[e + f*x])*Sqrt[c + d*Sec[e + f*x]])
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2989

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -S
imp[((b*c - a*d)*(B*c - A*d)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m - 1)*(c +
 d*Sin[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)
*(c^2 - d^2)), Int[(a + b*Sin[e + f*x])^(m - 2)*(c + d*Sin[e + f*x])^(n + 1
)*Simp[b*(b*c - a*d)*(B*c - A*d)*(m - 1) + a*d*(a*A*c + b*B*c - (A*b + a*B)
*d)*(n + 1) + (b*(b*d*(B*c - A*d) + a*(A*c*d + B*(c^2 - 2*d^2)))*(n + 1) -
a*(b*c - a*d)*(B*c - A*d)*(n + 2))*Sin[e + f*x] + b*(d*(A*b*c + a*B*c - a*A
*d)*(m + n + 1) - b*B*(c^2*m + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x] /;
FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0
] && NeQ[c^2 - d^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && NeQ[A, B]
```

Rule 3053

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(3/2)*Sqrt[(c_.) + (d_.)*sin[(e
_.) + (f_.)*(x_)]]), x_Symbol] :> Dist[C/b^2, Int[Sqrt[a + b*Sin[e + f*x]]/
Sqrt[c + d*Sin[e + f*x]], x], x] + Dist[1/b^2, Int[(A*b^2 - a^2*C + b*(b*B
- 2*a*C)*Sin[e + f*x])/((a + b*Sin[e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]
), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^{5/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\sqrt{a+b\sec(e+fx)}\right)\int \frac{\cos(e+fx)(b+a\cos(e+fx))^{3/2}}{(d+c\cos(e+fx))^{5/2}}\,dx}{\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

$$= -\frac{2d(bc-ad)\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}} + \frac{\left(2\sqrt{d+c\cos(e+fx)}\sqrt{a\cdots}\right.}{}$$

$$= -\frac{2d(bc-ad)\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}} + \frac{\left(a^2\sqrt{d+c\cos(e+fx)}\sqrt{a\cdots}\right.}{c^3\sqrt{b+a\cos(e\cdots}}$$

$$= -\frac{2a\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(e\cdots}{c^3\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx\cdots}}$$

$$= -\frac{2(a-b)\sqrt{a+b}\left(3bc^3-7ac^2d+bcd^2+3ad^3\right)\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+c\cdots}{(a-b)(d+c\,c\cdots}}}{3c^2(c-d)^2(c+d)^{3/2}(bc-\cdots}$$

Mathematica [B] time = 6.74, size = 1960, normalized size = 2.13

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((d + c*Cos[e + f*x])^3*Sec[e + f*x]*(a + b*Sec[e + f*x])^(3/2)*((2*(-(b*c*
d*Sin[e + f*x]) + a*d^2*Sin[e + f*x]))/(3*c*(c^2 - d^2)*(d + c*Cos[e + f*x]
)^2) + (2*(3*b*c^3*Sin[e + f*x] - 7*a*c^2*d*Sin[e + f*x] + b*c*d^2*Sin[e +
f*x] + 3*a*d^3*Sin[e + f*x]))/(3*c*(c^2 - d^2)^2*(d + c*Cos[e + f*x]))))/(f
*(b + a*Cos[e + f*x])*(c + d*Sec[e + f*x])^(5/2)) + ((d + c*Cos[e + f*x])^(
```

```
5/2)*Sec[e + f*x]*(a + b*Sec[e + f*x])^(3/2)*((4*(b*c - a*d)*(3*a*b*c^3 + a
^2*c^2*d - 4*b^2*c^2*d + a*b*c*d^2 - a^2*d^3)*Sqrt[((c + d)*Cot[(e + f*x)/2
]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c -
 a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]
*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e +
 f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(
e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e +
 f*x]]) + 4*(b*c - a*d)*(3*a^2*c^3 - 3*b^2*c^3 + 4*a*b*c^2*d + a^2*c*d^2 -
b^2*c*d^2 - 4*a*b*d^3)*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((
c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)
*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*Ellipti
cF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*
d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a +
b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[((c +
 d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e
+ f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)
/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin
[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[
2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt
[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])) + 2*(-3*a*b*c^3 + 7*a^2*c^2
*d - a*b*c*d^2 - 3*a^2*d^3)*((Sqrt[(-a + b)/(a + b)]*(a + b)*Cos[(e + f*x)/
2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[ArcSin[(Sqrt[(-a + b)/(a + b)]*Sin[(e
 + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(a + b)]], (2*(b*c - a*d))/((-a + b)*
(c + d))])/(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]^2)/(b + a*Cos[e + f*x])]*Sqr
t[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e + f*x])/(a + b)]*Sqrt[((a + b)*(d +
 c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e + f*x]))]) - (2*(b*c - a*d)*(((b*c
+ (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b +
a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[
e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sq
rt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]]
, (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*S
qrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - ((b*c + a*d)*Sqrt[((c +
 d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e
+ f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)
/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin
[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[
2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt
[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])))/(a*c) + (Sqrt[d + c*Cos[e
+ f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos[e + f*x]]))))/(3*c*(c - d)^2*(c + d
)^2*f*(b + a*Cos[e + f*x])^(3/2)*(c + d*Sec[e + f*x])^(5/2))
```

fricas [F] time = 9.29, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{d\sec\left(fx+e\right)+c}}{d^3\sec\left(fx+e\right)^3+3\,cd^2\sec\left(fx+e\right)^2+3\,c^2d\sec\left(fx+e\right)+c^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] integral((b*sec(f*x + e) + a)^(3/2)*sqrt(d*sec(f*x + e) + c)/(d^3*sec(f*x +
 e)^3 + 3*c*d^2*sec(f*x + e)^2 + 3*c^2*d*sec(f*x + e) + c^3), x)
```

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

$$\int\frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c)^(5/2), x)
```

maple [B] time = 2.23, size = 13060, normalized size = 14.21

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(5/2),x)
```

```
[Out] result too large to display
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c)^(5/2), x)
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^(5/2),x)
```

```
[Out] \text{Hanged}
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^{\frac{3}{2}}}{\left(c+d\sec\left(e+fx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e))**(5/2),x)
```

```
[Out] Integral((a + b*sec(e + f*x))**(3/2)/(c + d*sec(e + f*x))**(5/2), x)
```

3.213 $\int \frac{(a+b\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=1122

$$\frac{2(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)d^2}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}}-\frac{2\left(10bc^3-13adc^2-2bd^2c+5ad^3\right)\sqrt{a+b\sec(e+fx)}}{15c^2\left(c^2-d^2\right)^2f(d+c\cos(e+fx))\sqrt{c+d\sec(e}$$

```
[Out] 2/5*d^2*(b+a*cos(f*x+e))*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c/(c^2-d^2)/f/(d
+c*cos(f*x+e))^2/(c+d*sec(f*x+e))^(1/2)-2/15*d*(-13*a*c^2*d+5*a*d^3+10*b*c^
3-2*b*c*d^2)*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c^2/(c^2-d^2)^2/f/(d+c*cos(f
*x+e))/(c+d*sec(f*x+e))^(1/2)+2/15*(a-b)*(2*a*b*c*d*(35*c^4-8*c^2*d^2+5*d^4
)-a^2*d^2*(58*c^4-41*c^2*d^2+15*d^4)-b^2*(15*c^6+19*c^4*d^2-2*c^2*d^4))*(d+
c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticE((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)
/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^
(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c
)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^3/(
c-d)^3/(c+d)^(5/2)/(-a*d+b*c)^2/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(
1/2)-2/15*(b^2*c^3*(15*c^3+10*c^2*d+9*c*d^2-2*d^3)-2*a*b*c^2*(15*c^4+20*c^3
*d-4*c^2*d^2-4*c*d^3+5*d^4)+a^2*d*(60*c^5-2*c^4*d-66*c^3*d^2+25*c^2*d^3+30*
c*d^4-15*d^5))*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticF((c+d)^(1/2)*(b+a
*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c
+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))
^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f
*x+e))^(1/2)/c^4/(c-d)^3/(c+d)^(5/2)/(-a*d+b*c)/f/(b+a*cos(f*x+e))^(1/2)/(c
+d*sec(f*x+e))^(1/2)-2*a*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticPi((c+d)
^(1/2)*(b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),(a+b)*c/a/
(c+d),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+
e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*co
s(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^4/f/(c+d)^(1/2)/(b+a*cos(f*x+e))^
(1/2)/(c+d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 3.16, antiderivative size = 1122, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {3942, 3048, 3047, 3053, 2811, 2998, 2818, 2996}

$$\frac{2(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)d^2}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}}-\frac{2\left(10bc^3-13adc^2-2bd^2c+5ad^3\right)\sqrt{a+b\sec(e+fx)}}{15c^2\left(c^2-d^2\right)^2f(d+c\cos(e+fx))\sqrt{c+d\sec(e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^(7/2),x]
```

```
[Out] (2*(a - b)*Sqrt[a + b]*(2*a*b*c*d*(35*c^4 - 8*c^2*d^2 + 5*d^4) - a^2*d^2*(5
8*c^4 - 41*c^2*d^2 + 15*d^4) - b^2*(15*c^6 + 19*c^4*d^2 - 2*c^2*d^4))*Sqrt[
-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(
((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Co
s[e + f*x])^(3/2)*Csc[e + f*x]*EllipticE[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos
[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a
- b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(15*c^3*(c - d)^3*(c + d)^(5/2)*(b
*c - a*d)^2*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2*Sqrt[
a + b]*(b^2*c^3*(15*c^3 + 10*c^2*d + 9*c*d^2 - 2*d^3) - 2*a*b*c^2*(15*c^4 +
 20*c^3*d - 4*c^2*d^2 - 4*c*d^3 + 5*d^4) + a^2*d*(60*c^5 - 2*c^4*d - 66*c^3
*d^2 + 25*c^2*d^3 + 30*c*d^4 - 15*d^5))*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*
x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]
))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]
```

```
*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[
d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[
e + f*x]])/(15*c^4*(c - d)^3*(c + d)^(5/2)*(b*c - a*d)*f*Sqrt[b + a*Cos[e +
 f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2*a*Sqrt[a + b]*Sqrt[-(((b*c - a*d)*(1
- Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 +
Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*
Csc[e + f*x]*EllipticPi[((a + b)*c)/(a*(c + d)), ArcSin[(Sqrt[c + d]*Sqrt[b
 + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c -
d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(c^4*Sqrt[c + d]*f*Sqrt[b
+ a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) + (2*d^2*(b + a*Cos[e + f*x])*S
qrt[a + b*Sec[e + f*x]]*Sin[e + f*x])/(5*c*(c^2 - d^2)*f*(d + c*Cos[e + f*x
])^2*Sqrt[c + d*Sec[e + f*x]]) - (2*d*(10*b*c^3 - 13*a*c^2*d - 2*b*c*d^2 +
5*a*d^3)*Sqrt[a + b*Sec[e + f*x]]*Sin[e + f*x])/(15*c^2*(c^2 - d^2)^2*f*(d
+ c*Cos[e + f*x])*Sqrt[c + d*Sec[e + f*x]])
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && NeQ[A, B]
```

Rule 3047

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((c^2*C - B*c*d + A*d^2)*Cos[e + f*x]
*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d
^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)), Int[(a + b*Sin[e + f*x])^(m - 1)
*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(b*d*m + a*c*(n + 1)) + (c*C - B*d)*
(b*c*m + a*d*(n + 1)) - (d*(A*(a*d*(n + 2) - b*c*(n + 1)) + B*(b*d*(n + 1)
- a*c*(n + 2))) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] +
 b*(d*(B*c - A*d)*(m + n + 2) - C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]
^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0
] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3048

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
-Simp[((c^2*C + A*d^2)*Cos[e + f*x]*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f
*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)
), Int[(a + b*Sin[e + f*x])^(m - 1)*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(
b*d*m + a*c*(n + 1)) + c*C*(b*c*m + a*d*(n + 1)) - (A*d*(a*d*(n + 2) - b*c*
(n + 1)) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] - b*(A*d
^2*(m + n + 2) + C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x]
/; FreeQ[{a, b, c, d, e, f, A, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2
, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3053

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(3/2)*Sqrt[(c_.) + (d_.)*sin[(e
_.) + (f_.)*(x_)]]), x_Symbol] :> Dist[C/b^2, Int[Sqrt[a + b*Sin[e + f*x]]/
Sqrt[c + d*Sin[e + f*x]], x], x] + Dist[1/b^2, Int[(A*b^2 - a^2*C + b*(b*B
- 2*a*C)*Sin[e + f*x])/((a + b*Sin[e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]
), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{3/2}}{(c+d\sec(e+fx))^{7/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{\cos^2(e+fx)(b+a\cos(e+fx))^{3/2}}{(d+c\cos(e+fx))^{7/2}}\,dx}{\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}}$$

$$= \frac{2d^2(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}} + \frac{\left(2\sqrt{d+c\cos(e+fx)}\,\sqrt{a\right.}{}$$

$$= \frac{2d^2(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}} - \frac{2d\left(10bc^3-13ac^2d-2bcd\right.}{15c^2\left(c^2-d^2\right)^2f(d}$$

$$= \frac{2d^2(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}} - \frac{2d\left(10bc^3-13ac^2d-2bcd\right.}{15c^2\left(c^2-d^2\right)^2f(d}$$

$$= -\frac{2a\sqrt{a+b}\,\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\,\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}\,(d+c\cos(e+fx))^{3/2}\csc(e}{c^4\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}}$$

$$= \frac{2(a-b)\sqrt{a+b}\,\left(2abcd\left(35c^4-8c^2d^2+5d^4\right)-a^2d^2\left(58c^4-41c^2d^2+15d^4\right)-b^2\left(1\right.\right.}{}$$

Mathematica [B] time = 7.41, size = 2385, normalized size = 2.13

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(3/2)/(c + d*Sec[e + f*x])^(7/2),x]
```

```
[Out] ((d + c*Cos[e + f*x])^4*Sec[e + f*x]^2*(a + b*Sec[e + f*x])^(3/2)*((-2*(-(b
*c*d^2*Sin[e + f*x]) + a*d^3*Sin[e + f*x]))/(5*c^2*(c^2 - d^2)*(d + c*Cos[e
 + f*x])^3) - (4*(5*b*c^3*d*Sin[e + f*x] - 8*a*c^2*d^2*Sin[e + f*x] - b*c*d
^3*Sin[e + f*x] + 4*a*d^4*Sin[e + f*x]))/(15*c^2*(c^2 - d^2)^2*(d + c*Cos[e
 + f*x])^2) + (2*(15*b^2*c^6*Sin[e + f*x] - 70*a*b*c^5*d*Sin[e + f*x] + 58*
a^2*c^4*d^2*Sin[e + f*x] + 19*b^2*c^4*d^2*Sin[e + f*x] + 16*a*b*c^3*d^3*Sin
[e + f*x] - 41*a^2*c^2*d^4*Sin[e + f*x] - 2*b^2*c^2*d^4*Sin[e + f*x] - 10*a
*b*c*d^5*Sin[e + f*x] + 15*a^2*d^6*Sin[e + f*x]))/(15*c^2*(b*c - a*d)*(c^2
- d^2)^3*(d + c*Cos[e + f*x]))))/(f*(b + a*Cos[e + f*x])*(c + d*Sec[e + f*x
])^(7/2)) + ((d + c*Cos[e + f*x])^(7/2)*Sec[e + f*x]^2*(a + b*Sec[e + f*x])
^(3/2)*((4*(b*c - a*d)*(-15*a*b^2*c^6 + 5*a^2*b*c^5*d + 25*b^3*c^5*d + 13*a
^3*c^4*d^2 - 38*a*b^2*c^4*d^2 + 25*a^2*b*c^3*d^3 + 7*b^3*c^3*d^3 - 18*a^3*c
^2*d^4 - 11*a*b^2*c^2*d^4 + 2*a^2*b*c*d^5 + 5*a^3*d^6)*Sqrt[((c + d)*Cot[(e
 + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^
2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*
c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])
*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d
))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d +
c*Cos[e + f*x]]) + 4*(b*c - a*d)*(-15*a^2*b*c^6 + 15*b^3*c^6 + 15*a^3*c^5*d
 - 55*a*b^2*c^5*d + 33*a^2*b*c^4*d^2 + 19*b^3*c^4*d^2 + 13*a^3*c^3*d^3 + 35
*a*b^2*c^3*d^3 - 70*a^2*b*c^2*d^4 - 2*b^3*c^2*d^4 + 4*a^3*c*d^5 - 12*a*b^2*
c*d^5 + 20*a^2*b*d^6)*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c
 + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*
(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*Elliptic
F[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d
```

```
)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b
)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[((c +
d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e +
 f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/
2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin[
Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2
]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt[
b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])) + 2*(15*a*b^2*c^6 - 70*a^2*b
*c^5*d + 58*a^3*c^4*d^2 + 19*a*b^2*c^4*d^2 + 16*a^2*b*c^3*d^3 - 41*a^3*c^2*
d^4 - 2*a*b^2*c^2*d^4 - 10*a^2*b*c*d^5 + 15*a^3*d^6)*((Sqrt[(-a + b)/(a + b
)]*(a + b)*Cos[(e + f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[ArcSin[(Sqrt
[(-a + b)/(a + b)]*Sin[(e + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(a + b)]], (
2*(b*c - a*d))/((-a + b)*(c + d))])/(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]^2)/
(b + a*Cos[e + f*x])]*Sqrt[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e + f*x])/(a
 + b)]*Sqrt[((a + b)*(d + c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e + f*x]))])
 - (2*(b*c - a*d)*(((b*c + (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c
- d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*S
qrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e +
 f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]
^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)
/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])
- ((b*c + a*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b
+ a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Co
s[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c -
 a*d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)
/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f
*x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])))/(
a*c) + (Sqrt[d + c*Cos[e + f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos[e + f*x]])
)))/(15*c^2*(c - d)^3*(c + d)^3*(-(b*c) + a*d)*f*(b + a*Cos[e + f*x])^(3/2)
*(c + d*Sec[e + f*x])^(7/2))
```

fricas [F] time = 8.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}\sqrt{d\sec\left(fx+e\right)+c}}{d^4\sec\left(fx+e\right)^4+4\,cd^3\sec\left(fx+e\right)^3+6\,c^2d^2\sec\left(fx+e\right)^2+4\,c^3d\sec\left(fx+e\right)+c^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(7/2),x, algorithm="frica
s")
```

```
[Out] integral((b*sec(f*x + e) + a)^(3/2)*sqrt(d*sec(f*x + e) + c)/(d^4*sec(f*x +
 e)^4 + 4*c*d^3*sec(f*x + e)^3 + 6*c^2*d^2*sec(f*x + e)^2 + 4*c^3*d*sec(f*x
 + e) + c^4), x)
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(7/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c)^(7/2), x)
```

maple [B] time = 3.40, size = 39420, normalized size = 35.13

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(7/2),x)
```

```
[Out] result too large to display
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{3}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(3/2)/(c+d*sec(f*x+e))^(7/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(3/2)/(d*sec(f*x + e) + c)^(7/2), x)
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(3/2)/(c + d/cos(e + f*x))^(7/2),x)
```

```
[Out] \text{Hanged}
```

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+b*sec(f*x+e))**(3/2)/(c+d*sec(f*x+e))**(7/2),x)
```

```
[Out] Timed out
```

3.214 $\int \frac{(a+b\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^{5/2}}\,dx$

Optimal. Leaf size=891

$$-\frac{2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(e+fx)\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{\cdots}}{\sqrt{a+b}\sqrt{\cdots}}\cdots\right.\right.}{c^3\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

```
[Out] 2/3*(-a*d+b*c)^2*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c/(c^2-d^2)/f/(d+c*cos(f
*x+e))/(c+d*sec(f*x+e))^(1/2)-2/3*(a-b)*(7*a*c^2-3*a*d^2-4*b*c*d)*(d+c*cos(
f*x+e))^(3/2)*csc(f*x+e)*EllipticE((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/(a+b)
^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(1/2)*
(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1+c
os(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^2/(c-d)^2
/(c+d)^(3/2)/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)+2/3*(b^2*c^2*(
c+3*d)-a*b*c*(7*c^2+4*c*d-3*d^2)+a^2*(9*c^3-2*c^2*d-6*c*d^2+3*d^3))*(d+c*co
s(f*x+e))^(3/2)*csc(f*x+e)*EllipticF((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/(a+
b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(1/2
)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1
+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^3/(c-d)
^2/(c+d)^(3/2)/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)-2*a^2*(d+c*c
os(f*x+e))^(3/2)*csc(f*x+e)*EllipticPi((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/(
a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),(a+b)*c/a/(c+d),((a+b)*(c-d)/(a-b)/(c+d))
^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/
2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e
))^(1/2)/c^3/f/(c+d)^(1/2)/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 2.01, antiderivative size = 891, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {3942, 2792, 3053, 2811, 2998, 2818, 2996}

$$-\frac{2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(e+fx)\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{\cdots}}{\sqrt{a+b}\sqrt{\cdots}}\cdots\right.\right.}{c^3\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^(5/2),x]
```

```
[Out] (-2*(a - b)*Sqrt[a + b]*(7*a*c^2 - 4*b*c*d - 3*a*d^2)*Sqrt[-(((b*c - a*d)*(
1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1
+ Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2
)*Csc[e + f*x]*EllipticE[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqr
t[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*S
qrt[a + b*Sec[e + f*x]])/(3*c^2*(c - d)^2*(c + d)^(3/2)*f*Sqrt[b + a*Cos[e
+ f*x]]*Sqrt[c + d*Sec[e + f*x]]) + (2*Sqrt[a + b]*(b^2*c^2*(c + 3*d) - a*b
*c*(7*c^2 + 4*c*d - 3*d^2) + a^2*(9*c^3 - 2*c^2*d - 6*c*d^2 + 3*d^3))*Sqrt[
-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(
((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Co
s[e + f*x])^(3/2)*Csc[e + f*x]*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos
[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a
- b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(3*c^3*(c - d)^2*(c + d)^(3/2)*f*S
qrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2*a^2*Sqrt[a + b]*Sqrt
[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-
(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*C
os[e + f*x])^(3/2)*Csc[e + f*x]*EllipticPi[((a + b)*c)/(a*(c + d)), ArcSin[
(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]
])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(c^3*Sq
```

```
rt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) + (2*(b*c -
a*d)^2*Sqrt[a + b*Sec[e + f*x]]*Sin[e + f*x])/(3*c*(c^2 - d^2)*f*(d + c*Cos
[e + f*x])*Sqrt[c + d*Sec[e + f*x]])
```

Rule 2792

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> -Simp[((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*Cos
[e + f*x]*(a + b*Sin[e + f*x])^(m - 2)*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(
n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)), Int[(a + b*Sin[e
+ f*x])^(m - 3)*(c + d*Sin[e + f*x])^(n + 1)*Simp[b*(m - 2)*(b*c - a*d)^2 +
 a*d*(n + 1)*(c*(a^2 + b^2) - 2*a*b*d) + (b*(n + 1)*(a*b*c^2 + c*d*(a^2 + b
^2) - 3*a*b*d^2) - a*(n + 2)*(b*c - a*d)^2)*Sin[e + f*x] + b*(b^2*(c^2 - d^
2) - m*(b*c - a*d)^2 + d*n*(2*a*b*c - d*(a^2 + b^2)))*Sin[e + f*x]^2, x], x
], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2
, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 2] && LtQ[n, -1] && (IntegerQ[m] || Int
egersQ[2*m, 2*n])
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

```
&& NeQ[A, B]
```

Rule 3053

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(3/2)*Sqrt[(c_.) + (d_.)*sin[(e
_.) + (f_.)*(x_)]]), x_Symbol] :> Dist[C/b^2, Int[Sqrt[a + b*Sin[e + f*x]]/
Sqrt[c + d*Sin[e + f*x]], x], x] + Dist[1/b^2, Int[(A*b^2 - a^2*C + b*(b*B
- 2*a*C)*Sin[e + f*x])/((a + b*Sin[e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]
), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^{5/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\sqrt{a+b\sec(e+fx)}\right)\int \frac{(b+a\cos(e+fx))^{5/2}}{(d+c\cos(e+fx))^{5/2}}\,dx}{\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

$$= \frac{2(bc-ad)^2\sqrt{a+b\sec(e+fx)}\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}} + \frac{\left(2\sqrt{d+c\cos(e+fx)}\sqrt{a\ldots}\right.}{\ldots}$$

$$= \frac{2(bc-ad)^2\sqrt{a+b\sec(e+fx)}\sin(e+fx)}{3c\left(c^2-d^2\right)f(d+c\cos(e+fx))\sqrt{c+d\sec(e+fx)}} + \frac{\left(a^3\sqrt{d+c\cos(e+fx)}\sqrt{\ldots}\right.}{c^3\sqrt{b+a\cos(\ldots}}$$

$$= -\frac{2a^2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\operatorname{cs}\ldots}{c^3\sqrt{c+d}\,f\sqrt{b+a\cos(e+\ldots}}$$

$$= -\frac{2(a-b)\sqrt{a+b}\left(7ac^2-4bcd-3ad^2\right)\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+f\ldots}{(a-b)(d+c\cos(e+f\ldots}}}{3c^2(c-d)^2(c+d)^{3/2}f\ldots}$$

Mathematica [B] time = 6.73, size = 2026, normalized size = 2.27

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^(5/2),x]
```

```
[Out] ((d + c*Cos[e + f*x])^3*(a + b*Sec[e + f*x])^(5/2)*((2*(b^2*c^2*Sin[e + f*x
] - 2*a*b*c*d*Sin[e + f*x] + a^2*d^2*Sin[e + f*x]))/(3*c*(c^2 - d^2)*(d + c
*Cos[e + f*x])^2) + (2*(7*a*b*c^3*Sin[e + f*x] - 7*a^2*c^2*d*Sin[e + f*x] -
 4*b^2*c^2*d*Sin[e + f*x] + a*b*c*d^2*Sin[e + f*x] + 3*a^2*d^3*Sin[e + f*x]
))/(3*c*(c^2 - d^2)^2*(d + c*Cos[e + f*x]))))/(f*(b + a*Cos[e + f*x])^2*(c
+ d*Sec[e + f*x])^(5/2)) + ((d + c*Cos[e + f*x])^(5/2)*(a + b*Sec[e + f*x])
```

```
^(5/2)*((4*(b*c - a*d)*(2*a^2*b*c^3 + b^3*c^3 + a^3*c^2*d - 8*a*b^2*c^2*d +
 2*a^2*b*c*d^2 + 3*b^3*c*d^2 - a^3*d^3)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(
c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]
*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e
 + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/
2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*
x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]
) + 4*(b*c - a*d)*(3*a^3*c^3 - 7*a*b^2*c^3 + 4*b^3*c^2*d + a^3*c*d^2 + 3*a*
b^2*c*d^2 - 4*a^2*b*d^3)*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[
((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a -
b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*Ellip
ticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c -
a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a
+ b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[((c
 + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(
e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*
x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcS
in[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqr
t[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sq
rt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])) + 2*(-7*a^2*b*c^3 + 7*a^3
*c^2*d + 4*a*b^2*c^2*d - a^2*b*c*d^2 - 3*a^3*d^3)*((Sqrt[(-a + b)/(a + b)]*
(a + b)*Cos[(e + f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[ArcSin[(Sqrt[(-
a + b)/(a + b)]*Sin[(e + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(a + b)]], (2*(
b*c - a*d))/((-a + b)*(c + d))]])/(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]^2)/(b
+ a*Cos[e + f*x])]*Sqrt[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e + f*x])/(a +
b)]*Sqrt[((a + b)*(d + c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e + f*x]))]]) -
(2*(b*c - a*d)*(((b*c + (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d
)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt
[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*
x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)
/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]
^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (
(b*c + a*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a
*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e
 + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*
d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]
^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)
/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])))/(a*c
) + (Sqrt[d + c*Cos[e + f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos[e + f*x]]))))
/(3*c*(c - d)^2*(c + d)^2*f*(b + a*Cos[e + f*x])^(5/2)*(c + d*Sec[e + f*x])
^(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((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b \sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(d \sec\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)/(d*sec(f*x + e) + c)^(5/2), x)
```

maple [B] time = 2.30, size = 15922, normalized size = 17.87

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(5/2),x)
```

```
[Out] result too large to display
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(5/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)/(d*sec(f*x + e) + c)^(5/2), x)
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x))^(5/2),x)
```

```
[Out] \text{Hanged}
```

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+b*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e))**(5/2),x)
```

```
[Out] Timed out
```

3.215 $\int \frac{(a+b\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^{7/2}}\,dx$

Optimal. Leaf size=1150

$$-\frac{2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(e+fx)\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{b+a}}{\sqrt{a+b}\sqrt{d+c}}\right.\right.}{c^4\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

```
[Out] -2/5*d*(-a*d+b*c)*(b+a*cos(f*x+e))*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c/(c^2
-d^2)/f/(d+c*cos(f*x+e))^2/(c+d*sec(f*x+e))^(1/2)+2/15*(-a*d+b*c)*(-13*a*c^
2*d+5*a*d^3+5*b*c^3+3*b*c*d^2)*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c^2/(c^2-d
^2)^2/f/(d+c*cos(f*x+e))/(c+d*sec(f*x+e))^(1/2)+2/15*(a-b)*(b^2*c^2*d*(29*c
^2+3*d^2)-a*b*c*(35*c^4+34*c^2*d^2-5*d^4)+a^2*(58*c^4*d-41*c^2*d^3+15*d^5))
*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticE((c+d)^(1/2)*(b+a*cos(f*x+e))^(
1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a
+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d
+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c
^3/(c-d)^3/(c+d)^(5/2)/(-a*d+b*c)/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))
^(1/2)+2/15*(b^3*c^4*(5*c^2+24*c*d+3*d^2)-a*b^2*c^3*(35*c^3+42*c^2*d+21*c*d
^2-2*d^3)+a^2*b*c^2*(45*c^4+48*c^3*d+c^2*d^2-8*c*d^3+10*d^4)-a^3*d*(60*c^5-
2*c^4*d-66*c^3*d^2+25*c^2*d^3+30*c*d^4-15*d^5))*(d+c*cos(f*x+e))^(3/2)*csc(
f*x+e)*EllipticF((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*
x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-co
s(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(
d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^4/(c-d)^3/(c+d)^(5/2)/(-a*d
+b*c)/f/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)-2*a^2*(d+c*cos(f*x+e)
)^(3/2)*csc(f*x+e)*EllipticPi((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2
)/(d+c*cos(f*x+e))^(1/2),(a+b)*c/a/(c+d),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(
a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*
d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/
c^4/f/(c+d)^(1/2)/(b+a*cos(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 3.44, antiderivative size = 1150, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {3942, 2989, 3047, 3053, 2811, 2998, 2818, 2996}

$$-\frac{2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(e+fx)\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{b+a}}{\sqrt{a+b}\sqrt{d+c}}\right.\right.}{c^4\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^(7/2),x]
```

```
[Out] (2*(a - b)*Sqrt[a + b]*(b^2*c^2*d*(29*c^2 + 3*d^2) - a*b*c*(35*c^4 + 34*c^2
*d^2 - 5*d^4) + a^2*(58*c^4*d - 41*c^2*d^3 + 15*d^5))*Sqrt[-(((b*c - a*d)*(
1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1
+ Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2
)*Csc[e + f*x]*EllipticE[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqr
t[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*S
qrt[a + b*Sec[e + f*x]])/(15*c^3*(c - d)^3*(c + d)^(5/2)*(b*c - a*d)*f*Sqrt
[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) + (2*Sqrt[a + b]*(b^3*c^4*(5
*c^2 + 24*c*d + 3*d^2) - a*b^2*c^3*(35*c^3 + 42*c^2*d + 21*c*d^2 - 2*d^3) +
 a^2*b*c^2*(45*c^4 + 48*c^3*d + c^2*d^2 - 8*c*d^3 + 10*d^4) - a^3*d*(60*c^5
 - 2*c^4*d - 66*c^3*d^2 + 25*c^2*d^3 + 30*c*d^4 - 15*d^5))*Sqrt[-(((b*c - a
*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d
)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])
```

```
^(3/2)*Csc[e + f*x]*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])
/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d
))]*Sqrt[a + b*Sec[e + f*x]])/(15*c^4*(c - d)^3*(c + d)^(5/2)*(b*c - a*d)*f
*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2*a^2*Sqrt[a + b]*Sq
rt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt
[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c
*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticPi[((a + b)*c)/(a*(c + d)), ArcSi
n[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*
x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(c^4*
Sqrt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (2*d*(b*
c - a*d)*(b + a*Cos[e + f*x])*Sqrt[a + b*Sec[e + f*x]]*Sin[e + f*x])/(5*c*(
c^2 - d^2)*f*(d + c*Cos[e + f*x])^2*Sqrt[c + d*Sec[e + f*x]]) + (2*(b*c - a
*d)*(5*b*c^3 - 13*a*c^2*d + 3*b*c*d^2 + 5*a*d^3)*Sqrt[a + b*Sec[e + f*x]]*S
in[e + f*x])/(15*c^2*(c^2 - d^2)^2*f*(d + c*Cos[e + f*x])*Sqrt[c + d*Sec[e
+ f*x]])
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2989

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((A_.) + (B_.)*sin[(e_.) +
 (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :> -S
imp[((b*c - a*d)*(B*c - A*d)*Cos[e + f*x]*(a + b*Sin[e + f*x])^(m - 1)*(c +
 d*Sin[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)
*(c^2 - d^2)), Int[(a + b*Sin[e + f*x])^(m - 2)*(c + d*Sin[e + f*x])^(n + 1
)*Simp[b*(b*c - a*d)*(B*c - A*d)*(m - 1) + a*d*(a*A*c + b*B*c - (A*b + a*B)
*d)*(n + 1) + (b*(b*d*(B*c - A*d) + a*(A*c*d + B*(c^2 - 2*d^2)))*(n + 1) -
a*(b*c - a*d)*(B*c - A*d)*(n + 2))*Sin[e + f*x] + b*(d*(A*b*c + a*B*c - a*A
*d)*(m + n + 1) - b*B*(c^2*m + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x] /;
FreeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0
] && NeQ[c^2 - d^2, 0] && GtQ[m, 1] && LtQ[n, -1]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
```

```
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && NeQ[A, B]
```

Rule 3047

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((c^2*C - B*c*d + A*d^2)*Cos[e + f*x]
*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d
^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)), Int[(a + b*Sin[e + f*x])^(m - 1)
*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(b*d*m + a*c*(n + 1)) + (c*C - B*d)*
(b*c*m + a*d*(n + 1)) - (d*(A*(a*d*(n + 2) - b*c*(n + 1)) + B*(b*d*(n + 1)
- a*c*(n + 2))) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] +
 b*(d*(B*c - A*d)*(m + n + 2) - C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]
^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0
] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3053

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(3/2)*Sqrt[(c_.) + (d_.)*sin[(e
_.) + (f_.)*(x_)]]), x_Symbol] :> Dist[C/b^2, Int[Sqrt[a + b*Sin[e + f*x]]/
Sqrt[c + d*Sin[e + f*x]], x], x] + Dist[1/b^2, Int[(A*b^2 - a^2*C + b*(b*B
- 2*a*C)*Sin[e + f*x])/((a + b*Sin[e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]
), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^{7/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{\cos(e+fx)(b+a\cos(e+fx))^{5/2}}{(d+c\cos(e+fx))^{7/2}}\,dx}{\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}}$$

$$= -\frac{2d(bc-ad)(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}} + \frac{\left(2\sqrt{d+c\cos\right.}{}$$

$$= -\frac{2d(bc-ad)(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}} + \frac{2(bc-ad)\left(5\right.}{15c}$$

$$= -\frac{2d(bc-ad)(b+a\cos(e+fx))\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{5c\left(c^2-d^2\right)f(d+c\cos(e+fx))^2\sqrt{c+d\sec(e+fx)}} + \frac{2(bc-ad)\left(5\right.}{15c}$$

$$= -\frac{2a^2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}\,(d+c\cos(e+fx))^{3/2}\,\mathrm{cs}}{c^4\sqrt{c+d}\,f\sqrt{b+a\cos(e+}}$$

$$= \frac{2(a-b)\sqrt{a+b}\,\left(b^2c^2d\left(29c^2+3d^2\right)-abc\left(35c^4+34c^2d^2-5d^4\right)+a^2\left(58c^4d-\right.\right.}{}$$

Mathematica [B] time = 7.32, size = 2344, normalized size = 2.04

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^(7/2),x]
```

```
[Out] ((d + c*Cos[e + f*x])^4*Sec[e + f*x]*(a + b*Sec[e + f*x])^(5/2)*((-2*(b^2*c
^2*d*Sin[e + f*x] - 2*a*b*c*d^2*Sin[e + f*x] + a^2*d^3*Sin[e + f*x]))/(5*c^
2*(c^2 - d^2)*(d + c*Cos[e + f*x])^3) + (2*(5*b^2*c^4*Sin[e + f*x] - 21*a*b
*c^3*d*Sin[e + f*x] + 16*a^2*c^2*d^2*Sin[e + f*x] + 3*b^2*c^2*d^2*Sin[e + f
*x] + 5*a*b*c*d^3*Sin[e + f*x] - 8*a^2*d^4*Sin[e + f*x]))/(15*c^2*(c^2 - d^
2)^2*(d + c*Cos[e + f*x])^2) + (2*(35*a*b*c^5*Sin[e + f*x] - 58*a^2*c^4*d*S
in[e + f*x] - 29*b^2*c^4*d*Sin[e + f*x] + 34*a*b*c^3*d^2*Sin[e + f*x] + 41*
a^2*c^2*d^3*Sin[e + f*x] - 3*b^2*c^2*d^3*Sin[e + f*x] - 5*a*b*c*d^4*Sin[e +
 f*x] - 15*a^2*d^5*Sin[e + f*x]))/(15*c^2*(c^2 - d^2)^3*(d + c*Cos[e + f*x]
))))/(f*(b + a*Cos[e + f*x])^2*(c + d*Sec[e + f*x])^(7/2)) + ((d + c*Cos[e
+ f*x])^(7/2)*Sec[e + f*x]*(a + b*Sec[e + f*x])^(5/2)*((4*(b*c - a*d)*(10*a
^2*b*c^5 + 5*b^3*c^5 + 13*a^3*c^4*d - 48*a*b^2*c^4*d + 15*a^2*b*c^3*d^2 + 2
7*b^3*c^3*d^2 - 18*a^3*c^2*d^3 - 16*a*b^2*c^2*d^3 + 7*a^2*b*c*d^4 + 5*a^3*d
^5)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e +
 f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])
*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a -
 b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c
 - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a
*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) + 4*(b*c - a*d)*(15*a^3*c^5 - 35*a
*b^2*c^5 + 23*a^2*b*c^4*d + 29*b^3*c^4*d + 13*a^3*c^3*d^2 - 5*a*b^2*c^3*d^2
 - 75*a^2*b*c^2*d^3 + 3*b^3*c^2*d^3 + 4*a^3*c*d^4 + 8*a*b^2*c*d^4 + 20*a^2*
b*d^5)*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Co
s[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e +
f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[(
(-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2
```

```
*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[
b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[((c + d)*Cot[(e + f*x
)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*
c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*
d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*
(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a
*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f
*x]]*Sqrt[d + c*Cos[e + f*x]])) + 2*(-35*a^2*b*c^5 + 58*a^3*c^4*d + 29*a*b^
2*c^4*d - 34*a^2*b*c^3*d^2 - 41*a^3*c^2*d^3 + 3*a*b^2*c^2*d^3 + 5*a^2*b*c*d
^4 + 15*a^3*d^5)*((Sqrt[(-a + b)/(a + b)]*(a + b)*Cos[(e + f*x)/2]*Sqrt[d +
 c*Cos[e + f*x]]*EllipticE[ArcSin[(Sqrt[(-a + b)/(a + b)]*Sin[(e + f*x)/2])
/Sqrt[(b + a*Cos[e + f*x])/(a + b)]], (2*(b*c - a*d))/((-a + b)*(c + d))])/
(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]^2)/(b + a*Cos[e + f*x])]*Sqrt[b + a*Cos
[e + f*x]]*Sqrt[(b + a*Cos[e + f*x])/(a + b)]*Sqrt[((a + b)*(d + c*Cos[e +
f*x]))/((c + d)*(b + a*Cos[e + f*x]))]]) - (2*(b*c - a*d)*(((b*c + (a + b)*d
)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f
*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*C
sc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a - b
)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c -
 a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*C
os[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - ((b*c + a*d)*Sqrt[((c + d)*Cot[(e
+ f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2
)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c
 - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin[Sqrt[((-a
- b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*
c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[
e + f*x]]*Sqrt[d + c*Cos[e + f*x]])))/(a*c) + (Sqrt[d + c*Cos[e + f*x]]*Sin
[e + f*x])/(c*Sqrt[b + a*Cos[e + f*x]]))))/(15*c^2*(c - d)^3*(c + d)^3*f*(b
 + a*Cos[e + f*x])^(5/2)*(c + d*Sec[e + f*x])^(7/2))
```

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((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(7/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b \sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(d \sec\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(7/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)/(d*sec(f*x + e) + c)^(7/2), x)
```

maple [B] time = 2.98, size = 32283, normalized size = 28.07

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(7/2),x)
```

[Out] result too large to display

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(7/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)/(d*sec(f*x + e) + c)^(7/2), x)
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x))^(7/2),x)
```

```
[Out] \text{Hanged}
```

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+b*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e))**(7/2),x)
```

```
[Out] Timed out
```

3.216 $\int \frac{(a+b\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^{9/2}}\,dx$

Optimal. Leaf size=1428

$$-\frac{2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(e+fx)\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{b+a}}{\sqrt{a+b}\sqrt{d+c}}\right.\right.}{c^5\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

```
[Out] 2/7*d^2*(b+a*cos(f*x+e))^2*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c/(c^2-d^2)/f/
(d+c*cos(f*x+e))^3/(c+d*sec(f*x+e))^(1/2)-2/35*d*(-19*a*c^2*d+7*a*d^3+14*b*
c^3-2*b*c*d^2)*(b+a*cos(f*x+e))*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c^2/(c^2-
d^2)^2/f/(d+c*cos(f*x+e))^2/(c+d*sec(f*x+e))^(1/2)-2/105*(2*a*b*c*d*(91*c^4
-2*c^2*d^2+7*d^4)-a^2*d^2*(162*c^4-101*c^2*d^2+35*d^4)-b^2*(35*c^6+67*c^4*d
^2-6*c^2*d^4))*sin(f*x+e)*(a+b*sec(f*x+e))^(1/2)/c^3/(c^2-d^2)^3/f/(d+c*cos
(f*x+e))/(c+d*sec(f*x+e))^(1/2)+2/105*(a-b)*(2*b^3*c^3*d*(133*c^4+62*c^2*d^
2-3*d^4)+2*a^2*b*c*d*(406*c^6+73*c^4*d^2+132*c^2*d^4-35*d^6)-a*b^2*c^2*(245
*c^6+852*c^4*d^2+41*c^2*d^4+14*d^6)-a^3*(582*c^6*d^2-485*c^4*d^4+392*c^2*d^
6-105*d^8))*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticE((c+d)^(1/2)*(b+a*co
s(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d)
)^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1
/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+
e))^(1/2)/c^4/(c-d)^4/(c+d)^(7/2)/(-a*d+b*c)^2/f/(b+a*cos(f*x+e))^(1/2)/(c+
d*sec(f*x+e))^(1/2)+2/105*(b^3*c^4*(35*c^4+231*c^3*d+67*c^2*d^2+57*c*d^3-6*
d^4)-a*b^2*c^3*(245*c^5+413*c^4*d+439*c^3*d^2+53*c^2*d^3-12*c*d^4+14*d^5)+a
^2*b*c^2*(315*c^6+497*c^5*d+219*c^4*d^2-73*c^3*d^3+208*c^2*d^4+56*c*d^5-70*
d^6)-a^3*d*(525*c^7+57*c^6*d-699*c^5*d^2+214*c^4*d^3+672*c^3*d^4-280*c^2*d^
5-210*c*d^6+105*d^7))*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*EllipticF((c+d)^(1/
2)*(b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),((a+b)*(c-d)/(
a-b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1-cos(f*x+e))/(a+b)/(d+c*cos(f
*x+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b)/(d+c*cos(f*x+e)))^(1/2)*(a+
b*sec(f*x+e))^(1/2)/c^5/(c-d)^4/(c+d)^(7/2)/(-a*d+b*c)/f/(b+a*cos(f*x+e))^(
1/2)/(c+d*sec(f*x+e))^(1/2)-2*a^2*(d+c*cos(f*x+e))^(3/2)*csc(f*x+e)*Ellipti
cPi((c+d)^(1/2)*(b+a*cos(f*x+e))^(1/2)/(a+b)^(1/2)/(d+c*cos(f*x+e))^(1/2),(
a+b)*c/a/(c+d),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(a+b)^(1/2)*(-(-a*d+b*c)*(1
-cos(f*x+e))/(a+b)/(d+c*cos(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1+cos(f*x+e))/(a-b
)/(d+c*cos(f*x+e)))^(1/2)*(a+b*sec(f*x+e))^(1/2)/c^5/f/(c+d)^(1/2)/(b+a*cos
(f*x+e))^(1/2)/(c+d*sec(f*x+e))^(1/2)
```

Rubi [A] time = 5.44, antiderivative size = 1428, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.276$, Rules used = {3942, 3048, 3047, 3053, 2811, 2998, 2818, 2996}

$$-\frac{2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(\cos(e+fx)+1)}{(a-b)(d+c\cos(e+fx))}}(d+c\cos(e+fx))^{3/2}\csc(e+fx)\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{b+a}}{\sqrt{a+b}\sqrt{d+c}}\right.\right.}{c^5\sqrt{c+d}\,f\sqrt{b+a\cos(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^(9/2),x]
```

```
[Out] (2*(a - b)*Sqrt[a + b]*(2*b^3*c^3*d*(133*c^4 + 62*c^2*d^2 - 3*d^4) + 2*a^2*
b*c*d*(406*c^6 + 73*c^4*d^2 + 132*c^2*d^4 - 35*d^6) - a*b^2*c^2*(245*c^6 +
852*c^4*d^2 + 41*c^2*d^4 + 14*d^6) - a^3*(582*c^6*d^2 - 485*c^4*d^4 + 392*c
^2*d^6 - 105*d^8))*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*
Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Co
s[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticE[ArcSin[(Sq
rt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])]
```

```
, ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(105*c^4*(
c - d)^4*(c + d)^(7/2)*(b*c - a*d)^2*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*
Sec[e + f*x]]) + (2*Sqrt[a + b]*(b^3*c^4*(35*c^4 + 231*c^3*d + 67*c^2*d^2 +
 57*c*d^3 - 6*d^4) - a*b^2*c^3*(245*c^5 + 413*c^4*d + 439*c^3*d^2 + 53*c^2*
d^3 - 12*c*d^4 + 14*d^5) + a^2*b*c^2*(315*c^6 + 497*c^5*d + 219*c^4*d^2 - 7
3*c^3*d^3 + 208*c^2*d^4 + 56*c*d^5 - 70*d^6) - a^3*d*(525*c^7 + 57*c^6*d -
699*c^5*d^2 + 214*c^4*d^3 + 672*c^3*d^4 - 280*c^2*d^5 - 210*c*d^6 + 105*d^7
))*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]
*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(
d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[b
 + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c -
d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(105*c^5*(c - d)^4*(c + d)
^(7/2)*(b*c - a*d)*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]) - (
2*a^2*Sqrt[a + b]*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b)*(d + c*C
os[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*(d + c*Cos
[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticPi[((a + b)*c
)/(a*(c + d)), ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*S
qrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*
Sec[e + f*x]])/(c^5*Sqrt[c + d]*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*Sec[e
 + f*x]]) + (2*d^2*(b + a*Cos[e + f*x])^2*Sqrt[a + b*Sec[e + f*x]]*Sin[e +
f*x])/(7*c*(c^2 - d^2)*f*(d + c*Cos[e + f*x])^3*Sqrt[c + d*Sec[e + f*x]]) -
 (2*d*(14*b*c^3 - 19*a*c^2*d - 2*b*c*d^2 + 7*a*d^3)*(b + a*Cos[e + f*x])*Sq
rt[a + b*Sec[e + f*x]]*Sin[e + f*x])/(35*c^2*(c^2 - d^2)^2*f*(d + c*Cos[e +
 f*x])^2*Sqrt[c + d*Sec[e + f*x]]) - (2*(2*a*b*c*d*(91*c^4 - 2*c^2*d^2 + 7*
d^4) - a^2*d^2*(162*c^4 - 101*c^2*d^2 + 35*d^4) - b^2*(35*c^6 + 67*c^4*d^2
- 6*c^2*d^4))*Sqrt[a + b*Sec[e + f*x]]*Sin[e + f*x])/(105*c^3*(c^2 - d^2)^3
*f*(d + c*Cos[e + f*x])*Sqrt[c + d*Sec[e + f*x]])
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
```

```
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && NeQ[A, B]
```

Rule 3047

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.)
 + (f_.)*(x_)]^2), x_Symbol] :> -Simp[((c^2*C - B*c*d + A*d^2)*Cos[e + f*x]
*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d
^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)), Int[(a + b*Sin[e + f*x])^(m - 1)
*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(b*d*m + a*c*(n + 1)) + (c*C - B*d)*
(b*c*m + a*d*(n + 1)) - (d*(A*(a*d*(n + 2) - b*c*(n + 1)) + B*(b*d*(n + 1)
- a*c*(n + 2))) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] +
 b*(d*(B*c - A*d)*(m + n + 2) - C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]
^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0
] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3048

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_)*((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :>
-Simp[((c^2*C + A*d^2)*Cos[e + f*x]*(a + b*Sin[e + f*x])^m*(c + d*Sin[e + f
*x])^(n + 1))/(d*f*(n + 1)*(c^2 - d^2)), x] + Dist[1/(d*(n + 1)*(c^2 - d^2)
), Int[(a + b*Sin[e + f*x])^(m - 1)*(c + d*Sin[e + f*x])^(n + 1)*Simp[A*d*(
b*d*m + a*c*(n + 1)) + c*C*(b*c*m + a*d*(n + 1)) - (A*d*(a*d*(n + 2) - b*c*
(n + 1)) - C*(b*c*d*(n + 1) - a*(c^2 + d^2*(n + 1))))*Sin[e + f*x] - b*(A*d
^2*(m + n + 2) + C*(c^2*(m + 1) + d^2*(n + 1)))*Sin[e + f*x]^2, x], x], x]
/; FreeQ[{a, b, c, d, e, f, A, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2
, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 0] && LtQ[n, -1]
```

Rule 3053

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(3/2)*Sqrt[(c_.) + (d_.)*sin[(e
_.) + (f_.)*(x_)]]), x_Symbol] :> Dist[C/b^2, Int[Sqrt[a + b*Sin[e + f*x]]/
Sqrt[c + d*Sin[e + f*x]], x], x] + Dist[1/b^2, Int[(A*b^2 - a^2*C + b*(b*B
- 2*a*C)*Sin[e + f*x])/((a + b*Sin[e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]
), x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] &&
NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{5/2}}{(c+d\sec(e+fx))^{9/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{\cos^2(e+fx)(b+a\cos(e+fx))^{5/2}}{(d+c\cos(e+fx))^{9/2}}\,dx}{\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}}$$

$$= \frac{2d^2(b+a\cos(e+fx))^2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{7c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3\sqrt{c+d\sec(e+fx)}} + \frac{\left(2\sqrt{d+c\cos(e+fx)}\right.}{}$$

$$= \frac{2d^2(b+a\cos(e+fx))^2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{7c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3\sqrt{c+d\sec(e+fx)}} - \frac{2d\left(14bc^3-19ac^2d-\right.}{35c^2\left(\right.}$$

$$= \frac{2d^2(b+a\cos(e+fx))^2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{7c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3\sqrt{c+d\sec(e+fx)}} - \frac{2d\left(14bc^3-19ac^2d-\right.}{35c^2\left(\right.}$$

$$= \frac{2d^2(b+a\cos(e+fx))^2\sqrt{a+b\sec(e+fx)}\,\sin(e+fx)}{7c\left(c^2-d^2\right)f(d+c\cos(e+fx))^3\sqrt{c+d\sec(e+fx)}} - \frac{2d\left(14bc^3-19ac^2d-\right.}{35c^2\left(\right.}$$

$$= -\frac{2a^2\sqrt{a+b}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}\,(d+c\cos(e+fx))^{3/2}\,\mathrm{cs}}{c^5\sqrt{c+d}\,f\sqrt{b+a\cos(e+}}$$

$$= \frac{2(a-b)\sqrt{a+b}\,\left(2b^3c^3d\left(133c^4+62c^2d^2-3d^4\right)+2a^2bcd\left(406c^6+73c^4d^2+13\right.\right.}{}$$

Mathematica [B] time = 8.29, size = 2979, normalized size = 2.09

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*Sec[e + f*x])^(5/2)/(c + d*Sec[e + f*x])^(9/2),x]
```

```
[Out] ((d + c*Cos[e + f*x])^5*Sec[e + f*x]^2*(a + b*Sec[e + f*x])^(5/2)*((2*(b^2*
c^2*d^2*Sin[e + f*x] - 2*a*b*c*d^3*Sin[e + f*x] + a^2*d^4*Sin[e + f*x]))/(7
*c^3*(c^2 - d^2)*(d + c*Cos[e + f*x])^4) + (2*(-14*b^2*c^4*d*Sin[e + f*x] +
 43*a*b*c^3*d^2*Sin[e + f*x] - 29*a^2*c^2*d^3*Sin[e + f*x] + 2*b^2*c^2*d^3*
Sin[e + f*x] - 19*a*b*c*d^4*Sin[e + f*x] + 17*a^2*d^5*Sin[e + f*x]))/(35*c^
3*(c^2 - d^2)^2*(d + c*Cos[e + f*x])^3) + (2*(35*b^2*c^6*Sin[e + f*x] - 224
*a*b*c^5*d*Sin[e + f*x] + 234*a^2*c^4*d^2*Sin[e + f*x] + 67*b^2*c^4*d^2*Sin
[e + f*x] + 52*a*b*c^3*d^3*Sin[e + f*x] - 209*a^2*c^2*d^4*Sin[e + f*x] - 6*
b^2*c^2*d^4*Sin[e + f*x] - 20*a*b*c*d^5*Sin[e + f*x] + 71*a^2*d^6*Sin[e + f
*x]))/(105*c^3*(c^2 - d^2)^3*(d + c*Cos[e + f*x])^2) + (2*(245*a*b^2*c^8*Si
n[e + f*x] - 812*a^2*b*c^7*d*Sin[e + f*x] - 266*b^3*c^7*d*Sin[e + f*x] + 58
2*a^3*c^6*d^2*Sin[e + f*x] + 852*a*b^2*c^6*d^2*Sin[e + f*x] - 146*a^2*b*c^5
*d^3*Sin[e + f*x] - 124*b^3*c^5*d^3*Sin[e + f*x] - 485*a^3*c^4*d^4*Sin[e +
f*x] + 41*a*b^2*c^4*d^4*Sin[e + f*x] - 264*a^2*b*c^3*d^5*Sin[e + f*x] + 6*b
^3*c^3*d^5*Sin[e + f*x] + 392*a^3*c^2*d^6*Sin[e + f*x] + 14*a*b^2*c^2*d^6*S
in[e + f*x] + 70*a^2*b*c*d^7*Sin[e + f*x] - 105*a^3*d^8*Sin[e + f*x]))/(105
*c^3*(b*c - a*d)*(c^2 - d^2)^4*(d + c*Cos[e + f*x]))))/(f*(b + a*Cos[e + f*
x])^2*(c + d*Sec[e + f*x])^(9/2)) + ((d + c*Cos[e + f*x])^(9/2)*Sec[e + f*x
]^2*(a + b*Sec[e + f*x])^(5/2)*((4*(b*c - a*d)*(-70*a^2*b^2*c^8 - 35*b^4*c^
8 - 77*a^3*b*c^7*d + 427*a*b^3*c^7*d + 162*a^4*c^6*d^2 - 522*a^2*b^2*c^6*d^
```

```
2 - 298*b^4*c^6*d^2 + 348*a^3*b*c^5*d^3 + 666*a*b^3*c^5*d^3 - 263*a^4*c^4*d
^4 - 586*a^2*b^2*c^4*d^4 - 51*b^4*c^4*d^4 + 127*a^3*b*c^3*d^5 + 59*a*b^3*c^
3*d^5 + 136*a^4*c^2*d^6 + 26*a^2*b^2*c^2*d^6 - 14*a^3*b*c*d^7 - 35*a^4*d^8)
*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*
x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Cs
c[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)
*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c -
a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Co
s[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) + 4*(b*c - a*d)*(-105*a^3*b*c^8 + 245
*a*b^3*c^8 + 105*a^4*c^7*d - 567*a^2*b^2*c^7*d - 266*b^4*c^7*d + 190*a^3*b*
c^6*d^2 + 586*a*b^3*c^6*d^2 + 162*a^4*c^5*d^3 + 706*a^2*b^2*c^5*d^3 - 124*b
^4*c^5*d^3 - 1261*a^3*b*c^4*d^4 - 83*a*b^3*c^4*d^4 + 145*a^4*c^3*d^5 - 223*
a^2*b^2*c^3*d^5 + 6*b^4*c^3*d^5 + 548*a^3*b*c^2*d^6 + 20*a*b^3*c^2*d^6 - 28
*a^4*c*d^7 + 84*a^2*b^2*c*d^7 - 140*a^3*b*d^8)*((Sqrt[((c + d)*Cot[(e + f*x
)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*
c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*
d)]*Csc[e + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(
e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Si
n[(e + f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[
e + f*x]]) - (Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b +
 a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos
[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c -
a*d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/
2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*
x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])) + 2
*(245*a^2*b^2*c^8 - 812*a^3*b*c^7*d - 266*a*b^3*c^7*d + 582*a^4*c^6*d^2 + 8
52*a^2*b^2*c^6*d^2 - 146*a^3*b*c^5*d^3 - 124*a*b^3*c^5*d^3 - 485*a^4*c^4*d^
4 + 41*a^2*b^2*c^4*d^4 - 264*a^3*b*c^3*d^5 + 6*a*b^3*c^3*d^5 + 392*a^4*c^2*
d^6 + 14*a^2*b^2*c^2*d^6 + 70*a^3*b*c*d^7 - 105*a^4*d^8)*((Sqrt[(-a + b)/(a
 + b)]*(a + b)*Cos[(e + f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[ArcSin[(
Sqrt[(-a + b)/(a + b)]*Sin[(e + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(a + b)]
], (2*(b*c - a*d))/((-a + b)*(c + d))])/(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]
^2)/(b + a*Cos[e + f*x])]*Sqrt[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e + f*x]
)/(a + b)]*Sqrt[((a + b)*(d + c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e + f*x]
))]) - (2*(b*c - a*d)*(((b*c + (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)
/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d
)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc
[e + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x
)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e +
f*x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x
]]) - ((b*c + a*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)
*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d +
c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b
*c - a*d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e +
f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e
 + f*x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])
))/(a*c) + (Sqrt[d + c*Cos[e + f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos[e + f*
x]]))))/(105*c^3*(c - d)^4*(c + d)^4*(-(b*c) + a*d)*f*(b + a*Cos[e + f*x])^
(5/2)*(c + d*Sec[e + f*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((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(9/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(9/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)/(d*sec(f*x + e) + c)^(9/2), x)
```

maple [B] time = 4.94, size = 75468, normalized size = 52.85

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(9/2),x)
```

```
[Out] result too large to display
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{5}{2}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(5/2)/(c+d*sec(f*x+e))^(9/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(5/2)/(d*sec(f*x + e) + c)^(9/2), x)
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(5/2)/(c + d/cos(e + f*x))^(9/2),x)
```

```
[Out] \text{Hanged}
```

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+b*sec(f*x+e))**(5/2)/(c+d*sec(f*x+e))**(9/2),x)
```

```
[Out] Timed out
```

3.217 $\int \frac{(c+d\sec(e+fx))^{3/2}}{\sqrt{a+b\sec(e+fx)}}\,dx$

Optimal. Leaf size=652

$$\frac{2(bc-ad)\cot(e+fx)\sqrt{a+b\sec(e+fx)}\sqrt{c+d\sec(e+fx)}\sqrt{\frac{(bc-ad)(\sec(e+fx)-1)}{(c+d)(a+b\sec(e+fx))}}\sqrt{\frac{(bc-ad)(\sec(e+fx)+1)}{(c-d)(a+b\sec(e+fx))}}F\left(\sin^{-1}\left(\sqrt{\right.\right.}{abf\sqrt{\frac{(a+b)(c+d\sec(e+fx))}{(c+d)(a+b\sec(e+fx))}}}$$

```
[Out] -2*c*(c+d)*cot(f*x+e)*EllipticPi(((a+b)*(c+d*sec(f*x+e))/(c+d)/(a+b*sec(f*x
+e)))^(1/2),a*(c+d)/(a+b)/c,((a-b)*(c+d)/(a+b)/(c-d))^(1/2))*(a+b*sec(f*x+e
))^(3/2)*((-a*d+b*c)*(1+sec(f*x+e))/(c-d)/(a+b*sec(f*x+e)))^(1/2)*((a+b)*(-
a*d+b*c)*(-1+sec(f*x+e))*(c+d*sec(f*x+e))/(c+d)^2/(a+b*sec(f*x+e))^2)^(1/2)
/a/(a+b)/f/(c+d*sec(f*x+e))^(1/2)+2*d*(c+d)*cot(f*x+e)*EllipticPi(((a+b)*(c
+d*sec(f*x+e))/(c+d)/(a+b*sec(f*x+e)))^(1/2),b*(c+d)/(a+b)/d,((a-b)*(c+d)/(
a+b)/(c-d))^(1/2))*(a+b*sec(f*x+e))^(3/2)*((-a*d+b*c)*(1+sec(f*x+e))/(c-d)/
(a+b*sec(f*x+e)))^(1/2)*(-(a+b)*(a*d-b*c)*(-1+sec(f*x+e))*(c+d*sec(f*x+e))/
(c+d)^2/(a+b*sec(f*x+e))^2)^(1/2)/b/(a+b)/f/(c+d*sec(f*x+e))^(1/2)+2*(-a*d+
b*c)*cot(f*x+e)*EllipticF(((a+b)*(c+d*sec(f*x+e))/(c+d)/(a+b*sec(f*x+e)))^(
1/2),((a-b)*(c+d)/(a+b)/(c-d))^(1/2))*((-a*d+b*c)*(-1+sec(f*x+e))/(c+d)/(a+
b*sec(f*x+e)))^(1/2)*((-a*d+b*c)*(1+sec(f*x+e))/(c-d)/(a+b*sec(f*x+e)))^(1/
2)*(a+b*sec(f*x+e))^(1/2)*(c+d*sec(f*x+e))^(1/2)/a/b/f/((a+b)*(c+d*sec(f*x+
e))/(c+d)/(a+b*sec(f*x+e)))^(1/2)
```

Rubi [F] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+d\sec(e+fx))^{3/2}}{\sqrt{a+b\sec(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*Sec[e + f*x])^(3/2)/Sqrt[a + b*Sec[e + f*x]],x]
```

```
[Out] Defer[Int][(c + d*Sec[e + f*x])^(3/2)/Sqrt[a + b*Sec[e + f*x]], x]
```

Rubi steps

$$\int \frac{(c+d\sec(e+fx))^{3/2}}{\sqrt{a+b\sec(e+fx)}}\,dx=\int \frac{(c+d\sec(e+fx))^{3/2}}{\sqrt{a+b\sec(e+fx)}}\,dx$$

Mathematica [C] time = 32.78, size = 49385, normalized size = 75.74

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*Sec[e + f*x])^(3/2)/Sqrt[a + b*Sec[e + f*x]],x]
```

```
[Out] Result too large to show
```

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((c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(d \sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\sqrt{b \sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate((d*sec(f*x + e) + c)^(3/2)/sqrt(b*sec(f*x + e) + a), x)
```

maple [A] time = 2.10, size = 491, normalized size = 0.75

$$\frac{2\left(2\,\mathrm{EllipticPi}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},\frac{a+b}{a-b},\frac{\sqrt{\frac{c-d}{c+d}}}{\sqrt{\frac{a-b}{a+b}}}\right)d^{2}+2\,\mathrm{EllipticPi}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},-\frac{a+b}{a-b},\frac{\sqrt{\frac{c-d}{c+d}}}{\sqrt{\frac{a-b}{a+b}}}\right)c^{2}-\mathrm{Elliptic}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x)
```

```
[Out] 2/f*(2*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),(a+b)/(a-b
),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*d^2+2*EllipticPi((-1+cos(f*x+e))
*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+
b))^(1/2))*c^2-EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a
+b)*(c-d)/(a-b)/(c+d))^(1/2))*c^2+2*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))
^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*c*d-EllipticF((-1+cos(f*
x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*d^2)*
cos(f*x+e)*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*((b+a*cos(f*x+e))/cos(f*x+e)
)^(1/2)*sin(f*x+e)^2*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*((b+a*co
s(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)/(-1+cos(f*x+e))/(d+c*cos(f*x+e))/(b+a
*cos(f*x+e))/((a-b)/(a+b))^(1/2)
```

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

$$\int \frac{\left(d \sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}{\sqrt{b \sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate((d*sec(f*x + e) + c)^(3/2)/sqrt(b*sec(f*x + e) + a), x)
```

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

$$\int \frac{{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2}}{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^(3/2)/(a + b/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c + d/cos(e + f*x))^(3/2)/(a + b/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\left(c + d\sec\left(e + fx\right)\right)^{\frac{3}{2}}}{\sqrt{a + b\sec\left(e + fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**(3/2)/(a+b*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral((c + d*sec(e + f*x))**(3/2)/sqrt(a + b*sec(e + f*x)), x)
```

3.218 $\int \frac{\sqrt{c+d\sec(e+fx)}}{\sqrt{a+b\sec(e+fx)}}\,dx$

Optimal. Leaf size=198

$$-\frac{2\sqrt{a+b}\cot(e+fx)(c+d\sec(e+fx))\sqrt{\frac{(bc-ad)(1-\sec(e+fx))}{(a+b)(c+d\sec(e+fx))}}\sqrt{-\frac{(bc-ad)(\sec(e+fx)+1)}{(a-b)(c+d\sec(e+fx))}}\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{a+b\sec}}{\sqrt{a+b}\sqrt{c+d\sec}}\right.\right.}{af\sqrt{c+d}}$$

```
[Out] -2*cot(f*x+e)*EllipticPi((c+d)^(1/2)*(a+b*sec(f*x+e))^(1/2)/(a+b)^(1/2)/(c+
d*sec(f*x+e))^(1/2),(a+b)*c/a/(c+d),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(c+d*s
ec(f*x+e))*(a+b)^(1/2)*((-a*d+b*c)*(1-sec(f*x+e))/(a+b)/(c+d*sec(f*x+e)))^(
1/2)*(-(-a*d+b*c)*(1+sec(f*x+e))/(a-b)/(c+d*sec(f*x+e)))^(1/2)/a/f/(c+d)^(1
/2)
```

Rubi [A] time = 0.11, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.034$, Rules used = {3936}

$$-\frac{2\sqrt{a+b}\cot(e+fx)(c+d\sec(e+fx))\sqrt{\frac{(bc-ad)(1-\sec(e+fx))}{(a+b)(c+d\sec(e+fx))}}\sqrt{-\frac{(bc-ad)(\sec(e+fx)+1)}{(a-b)(c+d\sec(e+fx))}}\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{a+b\sec}}{\sqrt{a+b}\sqrt{c+d\sec}}\right.\right.}{af\sqrt{c+d}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*Sec[e + f*x]]/Sqrt[a + b*Sec[e + f*x]],x]
```

```
[Out] (-2*Sqrt[a + b]*Cot[e + f*x]*EllipticPi[((a + b)*c)/(a*(c + d)), ArcSin[(Sq
rt[c + d]*Sqrt[a + b*Sec[e + f*x]])/(Sqrt[a + b]*Sqrt[c + d*Sec[e + f*x]])]
, ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[((b*c - a*d)*(1 - Sec[e + f*x])
)/((a + b)*(c + d*Sec[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 + Sec[e + f*x]))/(
(a - b)*(c + d*Sec[e + f*x])))]*(c + d*Sec[e + f*x]))/(a*Sqrt[c + d]*f)
```

Rule 3936

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Simp[(2*(a + b*Csc[e + f*x])*Sqrt[((b*c - a*d)
*(1 + Csc[e + f*x]))/((c - d)*(a + b*Csc[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1
 - Csc[e + f*x]))/((c + d)*(a + b*Csc[e + f*x])))]*EllipticPi[(a*(c + d))/(
c*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Csc[e + f*x]])/Sqrt[a
 + b*Csc[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(c*f*Rt[(a + b)/
(c + d), 2]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{\sqrt{c+d\sec(e+fx)}}{\sqrt{a+b\sec(e+fx)}}\,dx = -\frac{2\sqrt{a+b}\cot(e+fx)\Pi\left(\frac{(a+b)c}{a(c+d)};\sin^{-1}\left(\frac{\sqrt{c+d}\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}\sqrt{c+d\sec(e+fx)}}\right)|\frac{(a+b)(c-d)}{(a-b)(c+d)}\right)\sqrt{\frac{(bc-ad)(1-\sec}{(a+b)(c+d\sec}}}{a\sqrt{c+d}f}$$

Mathematica [A] time = 5.54, size = 325, normalized size = 1.64

$$\frac{4\sin^2\left(\frac{1}{2}(e+fx)\right)\csc(e+fx)\sqrt{\frac{(a+b)\cot^2\left(\frac{1}{2}(e+fx)\right)}{a-b}}\sqrt{c+d\sec(e+fx)}\sqrt{\frac{(c+d)\csc^2\left(\frac{1}{2}(e+fx)\right)(a\cos(e+fx)+b)}{bc-ad}}\left(a(c+d)F\right.}{af(c+d)\sqrt{a+b\sec(e+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*Sec[e + f*x]]/Sqrt[a + b*Sec[e + f*x]],x]
```

```
[Out] (4*Sqrt[((a + b)*Cot[(e + f*x)/2]^2)/(a - b)]*Sqrt[((c + d)*(b + a*Cos[e +
f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*(a*(c + d)*EllipticF[Ar
cSin[Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(2*b*c - 2*a*d)
]], (2*(-(b*c) + a*d))/((a - b)*(c + d))] - (a + b)*c*EllipticPi[(-(b*c) +
a*d)/(a*(c + d)), ArcSin[Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2
]^2)/(2*b*c - 2*a*d)]], (2*(-(b*c) + a*d))/((a - b)*(c + d))])*Sqrt[c + d*S
ec[e + f*x]]*Sin[(e + f*x)/2]^2)/(a*(c + d)*f*Sqrt[((a + b)*(d + c*Cos[e +
f*x])*Csc[(e + f*x)/2]^2)/(-(b*c) + a*d)]*Sqrt[a + b*Sec[e + f*x]])
```

fricas [F] time = 4.52, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{d\sec\left(fx+e\right)+c}}{\sqrt{b\sec\left(fx+e\right)+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(d*sec(f*x + e) + c)/sqrt(b*sec(f*x + e) + a), x)
```

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

$$\int \frac{\sqrt{d\sec\left(fx+e\right)+c}}{\sqrt{b\sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate(sqrt(d*sec(f*x + e) + c)/sqrt(b*sec(f*x + e) + a), x)
```

maple [A] time = 2.13, size = 352, normalized size = 1.78

$$\frac{2\left(2\,\mathrm{EllipticPi}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)}, -\frac{a+b}{a-b}, \frac{\sqrt{\frac{c-d}{c+d}}}{\sqrt{\frac{a-b}{a+b}}}\right)c-\mathrm{EllipticF}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)}, \sqrt{\frac{(a+b)(c-d)}{(a-b)(c+d)}}\right)c+\mathrm{EllipticF}\left(\frac{(-1+}{}\right.\right.}{f\left(-1+\cos\left(fx+e\right)\right)\left(d+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x)
```

```
[Out] 2/f*(2*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-
b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*c-EllipticF((-1+cos(f*x+e))*((a
-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*c+EllipticF((-
1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2
))*d)*cos(f*x+e)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*((b+a*cos(f*
x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*sin(f*x+e)^2*((d+c*cos(f*x+e))/cos(f*x+e)
)^(1/2)*((b+a*cos(f*x+e))/cos(f*x+e))^(1/2)/(-1+cos(f*x+e))/(d+c*cos(f*x+e)
)/(b+a*cos(f*x+e))/((a-b)/(a+b))^(1/2)
```

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

$$\int \frac{\sqrt{d\sec\left(fx+e\right)+c}}{\sqrt{b\sec\left(fx+e\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate(sqrt(d*sec(f*x + e) + c)/sqrt(b*sec(f*x + e) + a), x)
```

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

$$\int \frac{\sqrt{c+\frac{d}{\cos\left(e+f\,x\right)}}}{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d/cos(e + f*x))^(1/2)/(a + b/cos(e + f*x))^(1/2),x)
```

```
[Out] int((c + d/cos(e + f*x))^(1/2)/(a + b/cos(e + f*x))^(1/2), x)
```

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

$$\int \frac{\sqrt{c+d\sec\left(e+fx\right)}}{\sqrt{a+b\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c+d*sec(f*x+e))**(1/2)/(a+b*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(sqrt(c + d*sec(e + f*x))/sqrt(a + b*sec(e + f*x)), x)
```

3.219 $\int \frac{1}{\sqrt{a+b\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\,dx$

Optimal. Leaf size=398

$$-\frac{2b\sqrt{a+b}\,\cot(e+fx)(c+d\sec(e+fx))\sqrt{\frac{(bc-ad)(1-\sec(e+fx))}{(a+b)(c+d\sec(e+fx))}}\sqrt{-\frac{(bc-ad)(\sec(e+fx)+1)}{(a-b)(c+d\sec(e+fx))}}\,F\left(\sin^{-1}\left(\frac{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}\right)\right|}{af\sqrt{c+d}\,(bc-ad)}$$

```
[Out] -2*cot(f*x+e)*EllipticPi((a+b)^(1/2)*(c+d*sec(f*x+e))^(1/2)/(c+d)^(1/2)/(a+
b*sec(f*x+e))^(1/2),a*(c+d)/(a+b)/c,((a-b)*(c+d)/(a+b)/(c-d))^(1/2))*(a+b*s
ec(f*x+e))*(c+d)^(1/2)*(-(-a*d+b*c)*(1-sec(f*x+e))/(c+d)/(a+b*sec(f*x+e)))^
(1/2)*((-a*d+b*c)*(1+sec(f*x+e))/(c-d)/(a+b*sec(f*x+e)))^(1/2)/a/c/f/(a+b)^
(1/2)-2*b*cot(f*x+e)*EllipticF((c+d)^(1/2)*(a+b*sec(f*x+e))^(1/2)/(a+b)^(1/
2)/(c+d*sec(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(c+d*sec(f*x+e))
*(a+b)^(1/2)*((-a*d+b*c)*(1-sec(f*x+e))/(a+b)/(c+d*sec(f*x+e)))^(1/2)*(-(-a
*d+b*c)*(1+sec(f*x+e))/(a-b)/(c+d*sec(f*x+e)))^(1/2)/a/(-a*d+b*c)/f/(c+d)^(
1/2)
```

Rubi [A] time = 0.44, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {3938, 3936, 3984}

$$-\frac{2b\sqrt{a+b}\,\cot(e+fx)(c+d\sec(e+fx))\sqrt{\frac{(bc-ad)(1-\sec(e+fx))}{(a+b)(c+d\sec(e+fx))}}\sqrt{-\frac{(bc-ad)(\sec(e+fx)+1)}{(a-b)(c+d\sec(e+fx))}}\,F\left(\sin^{-1}\left(\frac{\sqrt{c+d}\,\sqrt{a+b\sec(e+fx)}}{\sqrt{a+b}\,\sqrt{c+d\sec(e+fx)}}\right)\right|}{af\sqrt{c+d}\,(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + b*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]),x]
```

```
[Out] (-2*Sqrt[c + d]*Cot[e + f*x]*EllipticPi[(a*(c + d))/((a + b)*c), ArcSin[(Sq
rt[a + b]*Sqrt[c + d*Sec[e + f*x]])/(Sqrt[c + d]*Sqrt[a + b*Sec[e + f*x]])]
, ((a - b)*(c + d))/((a + b)*(c - d))]*Sqrt[-(((b*c - a*d)*(1 - Sec[e + f*x
]))/((c + d)*(a + b*Sec[e + f*x])))]*Sqrt[((b*c - a*d)*(1 + Sec[e + f*x]))/
((c - d)*(a + b*Sec[e + f*x]))]*(a + b*Sec[e + f*x]))/(a*Sqrt[a + b]*c*f) -
 (2*b*Sqrt[a + b]*Cot[e + f*x]*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[a + b*Sec
[e + f*x]])/(Sqrt[a + b]*Sqrt[c + d*Sec[e + f*x]])], ((a + b)*(c - d))/((a
- b)*(c + d))]*Sqrt[((b*c - a*d)*(1 - Sec[e + f*x]))/((a + b)*(c + d*Sec[e
+ f*x]))]*Sqrt[-(((b*c - a*d)*(1 + Sec[e + f*x]))/((a - b)*(c + d*Sec[e + f
*x])))]*(c + d*Sec[e + f*x]))/(a*Sqrt[c + d]*(b*c - a*d)*f)
```

Rule 3936

```
Int[Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]/Sqrt[csc[(e_.) + (f_.)*(x_)]
*(d_.) + (c_)], x_Symbol] :> Simp[(2*(a + b*Csc[e + f*x])*Sqrt[((b*c - a*d)
*(1 + Csc[e + f*x]))/((c - d)*(a + b*Csc[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1
 - Csc[e + f*x]))/((c + d)*(a + b*Csc[e + f*x])))]*EllipticPi[(a*(c + d))/(
c*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Csc[e + f*x]])/Sqrt[a
 + b*Csc[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(c*f*Rt[(a + b)/
(c + d), 2]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3938

```
Int[1/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqrt[csc[(e_.) + (f_.)*(x
_)]*(d_.) + (c_)]), x_Symbol] :> Dist[1/a, Int[Sqrt[a + b*Csc[e + f*x]]/Sqr
t[c + d*Csc[e + f*x]], x], x] - Dist[b/a, Int[Csc[e + f*x]/(Sqrt[a + b*Csc[
e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
```

```
 && NeQ[b*c - a*d, 0]
```

Rule 3984

```
Int[csc[(e_.) + (f_.)*(x_)]/(Sqrt[csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_)]*Sqr
t[csc[(e_.) + (f_.)*(x_)]*(d_.) + (c_)]), x_Symbol] :> Simp[(-2*(c + d*Csc[
e + f*x])*Sqrt[((b*c - a*d)*(1 - Csc[e + f*x]))/((a + b)*(c + d*Csc[e + f*x
]))]*Sqrt[-(((b*c - a*d)*(1 + Csc[e + f*x]))/((a - b)*(c + d*Csc[e + f*x]))
)]*EllipticF[ArcSin[Rt[(c + d)/(a + b), 2]*(Sqrt[a + b*Csc[e + f*x]]/Sqrt[c
 + d*Csc[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*
Rt[(c + d)/(a + b), 2]*Cot[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] &&
 NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\,dx = \frac{\int \frac{\sqrt{a+b\sec(e+fx)}}{\sqrt{c+d\sec(e+fx)}}\,dx}{a} - \frac{b\int \frac{\sec(e+fx)}{\sqrt{a+b\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}\,dx}{a}$$

$$= -\frac{2\sqrt{c+d}\cot(e+fx)\Pi\left(\frac{a(c+d)}{(a+b)c};\sin^{-1}\left(\frac{\sqrt{a+b}\sqrt{c+d\sec(e+fx)}}{\sqrt{c+d}\sqrt{a+b\sec(e+fx)}}\right)|\frac{(a-\cdots}{(a+\cdots}\cdots}{a\cdots}$$

Mathematica [C] time = 2.37, size = 249, normalized size = 0.63

$$\frac{4i\cos^2\left(\frac{1}{2}(e+fx)\right)\sec(e+fx)\sqrt{\frac{a\cos(e+fx)+b}{(a+b)(\cos(e+fx)+1)}}\sqrt{\frac{c\cos(e+fx)+d}{(c+d)(\cos(e+fx)+1)}}\left(F\left(i\sinh^{-1}\left(\sqrt{\frac{b-a}{a+b}}\tan\left(\frac{1}{2}(e+fx)\right)\right)|\frac{(a+b\cdots}{(a-b\cdots}\cdots}{f\sqrt{\frac{b-a}{a+b}}\sqrt{a+b\sec(e+fx)}\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[a + b*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x]]),x]
```

```
[Out] ((4*I)*Cos[(e + f*x)/2]^2*Sqrt[(b + a*Cos[e + f*x])/((a + b)*(1 + Cos[e + f
*x]))]*Sqrt[(d + c*Cos[e + f*x])/((c + d)*(1 + Cos[e + f*x]))]*(EllipticF[I
*ArcSinh[Sqrt[(-a + b)/(a + b)]*Tan[(e + f*x)/2]], ((a + b)*(c - d))/((a -
b)*(c + d))] - 2*EllipticPi[-((a + b)/(a - b)), I*ArcSinh[Sqrt[(-a + b)/(a
+ b)]*Tan[(e + f*x)/2]], ((a + b)*(c - d))/((a - b)*(c + d))])*Sec[e + f*x]
)/(Sqrt[(-a + b)/(a + b)]*f*Sqrt[a + b*Sec[e + f*x]]*Sqrt[c + d*Sec[e + f*x
]])
```

fricas [F] time = 5.84, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b\sec\left(fx+e\right)+a}\sqrt{d\sec\left(fx+e\right)+c}}{bd\sec\left(fx+e\right)^2+ac+(bc+ad)\sec\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] integral(sqrt(b*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c)/(b*d*sec(f*x + e
)^2 + a*c + (b*c + a*d)*sec(f*x + e)), x)
```

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

$$\int \frac{1}{\sqrt{b\sec\left(fx+e\right)+a}\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[Out] integrate(1/(sqrt(b*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c)), x)
```

maple [A] time = 2.15, size = 292, normalized size = 0.73

$$-\frac{2\left(\mathrm{EllipticF}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},\sqrt{\frac{(a+b)(c-d)}{(a-b)(c+d)}}\right)-2\,\mathrm{EllipticPi}\left(\frac{\left(-1+\cos\left(fx+e\right)\right)\sqrt{\frac{a-b}{a+b}}}{\sin\left(fx+e\right)},-\frac{a+b}{a-b},\frac{\sqrt{\frac{c-d}{c+d}}}{\sqrt{\frac{a-b}{a+b}}}\right)\right)\cos\left(fx+e\right)\left(\sin^{2}\right.}{f\left(-1+\cos\left(fx+e\right)\right)\left(d+c\cos\left(fx+e\right)\right)\left(b+a\cos\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x)
```

```
[Out] -2/f*(EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)
/(a-b)/(c+d))^(1/2))-2*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f
*x+e),-(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2)))*cos(f*x+e)*sin
(f*x+e)^2*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*((b+a*cos(f*x+e))/cos(f*x+e))
^(1/2)*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+c
os(f*x+e))/(c+d))^(1/2)/(-1+cos(f*x+e))/(d+c*cos(f*x+e))/(b+a*cos(f*x+e))/(
(a-b)/(a+b))^(1/2)
```

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

$$\int \frac{1}{\sqrt{b\sec\left(fx+e\right)+a}\,\sqrt{d\sec\left(fx+e\right)+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))^(1/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] integrate(1/(sqrt(b*sec(f*x + e) + a)*sqrt(d*sec(f*x + e) + c)), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{b}{\cos\left(e+fx\right)}}\,\sqrt{c+\frac{d}{\cos\left(e+fx\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2)),x)
```

```
[Out] int(1/((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(1/2)), x)
```

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

$$\int \frac{1}{\sqrt{a+b\sec\left(e+fx\right)}\,\sqrt{c+d\sec\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))**(1/2)/(a+b*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*sec(e + f*x))*sqrt(c + d*sec(e + f*x))), x)
```

3.220 $\int \frac{1}{\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=622

$$-\frac{2d\sqrt{a+b}\,(2c-d)\cot(e+fx)(c+d\sec(e+fx))\sqrt{\frac{(bc-ad)(1-\sec(e+fx))}{(a+b)(c+d\sec(e+fx))}}\sqrt{-\frac{(bc-ad)(\sec(e+fx)+1)}{(a-b)(c+d\sec(e+fx))}}\,F\left(\sin^{-1}\left(\frac{\sqrt{c+d}\,\sqrt{a+b}}{\sqrt{a+b}\,\sqrt{c+d}}\right.\right.}{c^2f(c-d)\sqrt{c+d}\,(bc-ad)}$$

```
[Out] -2*(a-b)*d^2*cot(f*x+e)*EllipticE((c+d)^(1/2)*(a+b*sec(f*x+e))^(1/2)/(a+b)^
(1/2)/(c+d*sec(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*(c+d*sec(f*x+
e))*(a+b)^(1/2)*((-a*d+b*c)*(1-sec(f*x+e))/(a+b)/(c+d*sec(f*x+e)))^(1/2)*(-
(-a*d+b*c)*(1+sec(f*x+e))/(a-b)/(c+d*sec(f*x+e)))^(1/2)/c/(c-d)/(-a*d+b*c)^
2/f/(c+d)^(1/2)-2*(2*c-d)*d*cot(f*x+e)*EllipticF((c+d)^(1/2)*(a+b*sec(f*x+e
))^(1/2)/(a+b)^(1/2)/(c+d*sec(f*x+e))^(1/2),((a+b)*(c-d)/(a-b)/(c+d))^(1/2)
)*(c+d*sec(f*x+e))*(a+b)^(1/2)*((-a*d+b*c)*(1-sec(f*x+e))/(a+b)/(c+d*sec(f*
x+e)))^(1/2)*(-(-a*d+b*c)*(1+sec(f*x+e))/(a-b)/(c+d*sec(f*x+e)))^(1/2)/c^2/
(c-d)/(-a*d+b*c)/f/(c+d)^(1/2)-2*cot(f*x+e)*EllipticPi((c+d)^(1/2)*(a+b*sec
(f*x+e))^(1/2)/(a+b)^(1/2)/(c+d*sec(f*x+e))^(1/2),(a+b)*c/a/(c+d),((a+b)*(c
-d)/(a-b)/(c+d))^(1/2))*(c+d*sec(f*x+e))*(a+b)^(1/2)*((-a*d+b*c)*(1-sec(f*x
+e))/(a+b)/(c+d*sec(f*x+e)))^(1/2)*(-(-a*d+b*c)*(1+sec(f*x+e))/(a-b)/(c+d*s
ec(f*x+e)))^(1/2)/a/c^2/f/(c+d)^(1/2)
```

Rubi [A] time = 1.32, antiderivative size = 763, normalized size of antiderivative = 1.23, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {3942, 3054, 2811, 2998, 2818, 2996}

$$-\frac{2d\sqrt{a+b}\,(2c-d)\csc(e+fx)\sqrt{a+b\sec(e+fx)}\,(c\cos(e+fx)+d)^{3/2}\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(c\cos(e+fx)+d)}}\sqrt{-\frac{(bc-ad)(\cos(e+f}{(a-b)(c\cos(e+f}}}{c^2f(c-d)\sqrt{c+d}\,(bc-ad)\sqrt{a\cos(e+fx)+b}\,\sqrt{c+d\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*x])^(3/2)),x]
```

```
[Out] (-2*(a - b)*Sqrt[a + b]*d^2*Sqrt[-(((b*c - a*d)*(1 - Cos[e + f*x]))/((a + b
)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f*x]))/((a - b)*
(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f*x]*EllipticE[A
rcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e
+ f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(
c*(c - d)*Sqrt[c + d]*(b*c - a*d)^2*f*Sqrt[b + a*Cos[e + f*x]]*Sqrt[c + d*S
ec[e + f*x]]) - (2*Sqrt[a + b]*(2*c - d)*d*Sqrt[-(((b*c - a*d)*(1 - Cos[e +
 f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e + f
*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e + f
*x]*EllipticF[ArcSin[(Sqrt[c + d]*Sqrt[b + a*Cos[e + f*x]])/(Sqrt[a + b]*Sq
rt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((a - b)*(c + d))]*Sqrt[a + b*S
ec[e + f*x]])/(c^2*(c - d)*Sqrt[c + d]*(b*c - a*d)*f*Sqrt[b + a*Cos[e + f*x
]]*Sqrt[c + d*Sec[e + f*x]]) - (2*Sqrt[a + b]*Sqrt[-(((b*c - a*d)*(1 - Cos[
e + f*x]))/((a + b)*(d + c*Cos[e + f*x])))]*Sqrt[-(((b*c - a*d)*(1 + Cos[e
+ f*x]))/((a - b)*(d + c*Cos[e + f*x])))]*(d + c*Cos[e + f*x])^(3/2)*Csc[e
+ f*x]*EllipticPi[((a + b)*c)/(a*(c + d)), ArcSin[(Sqrt[c + d]*Sqrt[b + a*C
os[e + f*x]])/(Sqrt[a + b]*Sqrt[d + c*Cos[e + f*x]])], ((a + b)*(c - d))/((
a - b)*(c + d))]*Sqrt[a + b*Sec[e + f*x]])/(a*c^2*Sqrt[c + d]*f*Sqrt[b + a*
Cos[e + f*x]]*Sqrt[c + d*Sec[e + f*x]])
```

Rule 2811

```
Int[Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]/Sqrt[(c_.) + (d_.)*sin[(e_.)
 + (f_.)*(x_)]], x_Symbol] :> Simp[(2*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d
)*(1 + Sin[e + f*x]))/((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(
```

```
1 - Sin[e + f*x]))/((c + d)*(a + b*Sin[e + f*x])))]*EllipticPi[(b*(c + d))/
(d*(a + b)), ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt[c + d*Sin[e + f*x]])/Sqrt[
a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)*(c - d))])/(d*f*Rt[(a + b)
/(c + d), 2]*Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c -
 a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(a + b)/(c + d)]
```

Rule 2818

```
Int[1/(Sqrt[(a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]]*Sqrt[(c_) + (d_.)*sin[(e_
.) + (f_.)*(x_)]]), x_Symbol] :> Simp[(2*(c + d*Sin[e + f*x])*Sqrt[((b*c -
a*d)*(1 - Sin[e + f*x]))/((a + b)*(c + d*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d
)*(1 + Sin[e + f*x]))/((a - b)*(c + d*Sin[e + f*x])))]*EllipticF[ArcSin[Rt[
(c + d)/(a + b), 2]*(Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]])], (
(a + b)*(c - d))/((a - b)*(c + d))])/(f*(b*c - a*d)*Rt[(c + d)/(a + b), 2]*
Cos[e + f*x]), x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && N
eQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && PosQ[(c + d)/(a + b)]
```

Rule 2996

```
Int[((A_) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_) + (b_.)*sin[(e_.) + (f_.)
*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> Sim
p[(-2*A*(c - d)*(a + b*Sin[e + f*x])*Sqrt[((b*c - a*d)*(1 + Sin[e + f*x]))/
((c - d)*(a + b*Sin[e + f*x]))]*Sqrt[-(((b*c - a*d)*(1 - Sin[e + f*x]))/((c
 + d)*(a + b*Sin[e + f*x])))]*EllipticE[ArcSin[(Rt[(a + b)/(c + d), 2]*Sqrt
[c + d*Sin[e + f*x]])/Sqrt[a + b*Sin[e + f*x]]], ((a - b)*(c + d))/((a + b)
*(c - d))])/(f*(b*c - a*d)^2*Rt[(a + b)/(c + d), 2]*Cos[e + f*x]), x] /; Fr
eeQ[{a, b, c, d, e, f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0]
&& NeQ[c^2 - d^2, 0] && EqQ[A, B] && PosQ[(a + b)/(c + d)]
```

Rule 2998

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)])/(((a_.) + (b_.)*sin[(e_.) + (f_
.)*(x_)])^(3/2)*Sqrt[(c_) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :> D
ist[(A - B)/(a - b), Int[1/(Sqrt[a + b*Sin[e + f*x]]*Sqrt[c + d*Sin[e + f*x
]]), x], x] - Dist[(A*b - a*B)/(a - b), Int[(1 + Sin[e + f*x])/((a + b*Sin[
e + f*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e,
f, A, B}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
 && NeQ[A, B]
```

Rule 3054

```
Int[((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2)/(((a_.) + (b_.)*sin[(e_.) + (
f_.)*(x_)])^(3/2)*Sqrt[(c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)]]), x_Symbol] :
> Dist[C/b^2, Int[Sqrt[a + b*Sin[e + f*x]]/Sqrt[c + d*Sin[e + f*x]], x], x]
 + Dist[1/b^2, Int[(A*b^2 - a^2*C - 2*a*b*C*Sin[e + f*x])/((a + b*Sin[e + f
*x])^(3/2)*Sqrt[c + d*Sin[e + f*x]]), x], x] /; FreeQ[{a, b, c, d, e, f, A,
 C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3942

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.) + (a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(d
_.) + (c_))^(n_), x_Symbol] :> Dist[(Sqrt[d + c*Sin[e + f*x]]*Sqrt[a + b*Cs
c[e + f*x]])/(Sqrt[b + a*Sin[e + f*x]]*Sqrt[c + d*Csc[e + f*x]]), Int[((b +
 a*Sin[e + f*x])^m*(d + c*Sin[e + f*x])^n)/Sin[e + f*x]^(m + n), x], x] /;
FreeQ[{a, b, c, d, e, f, m, n}, x] && NeQ[b*c - a*d, 0] && IntegerQ[m + 1/2
] && IntegerQ[n + 1/2] && LeQ[-2, m + n, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sec(e+fx)}\,(c+d\sec(e+fx))^{3/2}}\,dx = \frac{\left(\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{\cos^2(e+f}{\sqrt{b+a\cos(e+fx)}\,(d+c}}{\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}}$$

$$= \frac{\left(\sqrt{d+c\cos(e+fx)}\,\sqrt{a+b\sec(e+fx)}\right)\int \frac{\sqrt{d+c\cos(e+fx)}}{\sqrt{b+a\cos(e+fx)}}\,dx}{c^2\sqrt{b+a\cos(e+fx)}\,\sqrt{c+d\sec(e+fx)}}$$

$$= -\frac{2\sqrt{a+b}\,\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\,\sqrt{-\frac{(bc-ad)(1+\cos(e+fx))}{(a-b)(d+c\cos(e+fx))}}\,(d+c}{ac^2\sqrt{c+}}$$

$$= -\frac{2(a-b)\sqrt{a+b}\,d^2\sqrt{-\frac{(bc-ad)(1-\cos(e+fx))}{(a+b)(d+c\cos(e+fx))}}\,\sqrt{-\frac{(bc-ad)(1+\cos(e+f}{(a-b)(d+c\cos(e+f}}}{c(c-d)\sqrt{c+d}}$$

<u>**Mathematica**</u> **[B]** time = 9.64, size = 1761, normalized size = 2.83

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/(Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e + f*x])^(3/2)),x]
```

```
[Out] (Sqrt[b + a*Cos[e + f*x]]*(d + c*Cos[e + f*x])^(3/2)*Sec[e + f*x]^2*((-4*b*
c*d*(b*c - a*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b
 + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*C
os[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[ArcSin
[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[
2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*(c + d
)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) + 4*(b*c - a*d)*(b*c^2
 - a*c*d - 2*b*d^2)*((Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c +
 d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d
 + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticF[
ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]
/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*
(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]) - (Sqrt[((c + d)
*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f
*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]
^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c - a*d)/((a + b)*c), ArcSin[Sq
rt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]/Sqrt[2]]
, (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*x)/2]^4)/((a + b)*c*Sqrt[b
+ a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])) - 2*a*d^2*((Sqrt[(-a + b)/(a +
 b)]*(a + b)*Cos[(e + f*x)/2]*Sqrt[d + c*Cos[e + f*x]]*EllipticE[ArcSin[(Sq
rt[(-a + b)/(a + b)]*Sin[(e + f*x)/2])/Sqrt[(b + a*Cos[e + f*x])/(a + b)]],
 (2*(b*c - a*d))/((-a + b)*(c + d))])/(a*c*Sqrt[((a + b)*Cos[(e + f*x)/2]^2
)/(b + a*Cos[e + f*x])]*Sqrt[b + a*Cos[e + f*x]]*Sqrt[(b + a*Cos[e + f*x])/
(a + b)]*Sqrt[((a + b)*(d + c*Cos[e + f*x]))/((c + d)*(b + a*Cos[e + f*x]))
]) - (2*(b*c - a*d)*(((b*c + (a + b)*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(
c - d)]*Sqrt[((c + d)*(b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]
*Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e
 + f*x]*EllipticF[ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*x)/
2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e + f*
x)/2]^4)/((a + b)*(c + d)*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]]
) - ((b*c + a*d)*Sqrt[((c + d)*Cot[(e + f*x)/2]^2)/(c - d)]*Sqrt[((c + d)*(
b + a*Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Sqrt[((-a - b)*(d + c*
Cos[e + f*x])*Csc[(e + f*x)/2]^2)/(b*c - a*d)]*Csc[e + f*x]*EllipticPi[(b*c
 - a*d)/((a + b)*c), ArcSin[Sqrt[((-a - b)*(d + c*Cos[e + f*x])*Csc[(e + f*
```

```
x)/2]^2)/(b*c - a*d)]/Sqrt[2]], (2*(b*c - a*d))/((a + b)*(c - d))]*Sin[(e +
 f*x)/2]^4)/((a + b)*c*Sqrt[b + a*Cos[e + f*x]]*Sqrt[d + c*Cos[e + f*x]])))
/(a*c) + (Sqrt[d + c*Cos[e + f*x]]*Sin[e + f*x])/(c*Sqrt[b + a*Cos[e + f*x]
]))))/((c - d)*(c + d)*(b*c - a*d)*f*Sqrt[a + b*Sec[e + f*x]]*(c + d*Sec[e
+ f*x])^(3/2)) + (2*d^2*(b + a*Cos[e + f*x])*(d + c*Cos[e + f*x])*Sec[e + f
*x]*Tan[e + f*x])/((-(b*c) + a*d)*(-c^2 + d^2)*f*Sqrt[a + b*Sec[e + f*x]]*(
c + d*Sec[e + f*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(1/(c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="fri
cas")
```

```
[Out] Timed out
```

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

$$\int \frac{1}{\sqrt{b \sec\left(fx+e\right)+a}\left(d \sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="gia
c")
```

```
[Out] integrate(1/(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c)^(3/2)), x)
```

maple [B] time = 2.36, size = 3451, normalized size = 5.55

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x)
```

```
[Out] -2/f*(-EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d
)/(a-b)/(c+d))^(1/2))*b*d^3*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*(
(d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)+2*((b+a*cos(f*x+e))
/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*
EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-
d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*sin(f*x+e)*cos(f*x+e)*b*c*d^2+2*((b+a*
cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c
+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)
/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*sin(f*x+e)*cos(f*x+e)*a*c^2
*d-((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f
*x+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e
),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*cos(f*x+e)*a*c^2*d-((b+a*cos(
f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))
^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d
)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*cos(f*x+e)*a*c*d^2+((b+a*cos(f*x+e))/(1+co
s(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*Ellipt
icF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d)
)^(1/2))*sin(f*x+e)*cos(f*x+e)*b*c^2*d+((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+
b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f
*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*sin(
f*x+e)*cos(f*x+e)*a*c*d^2-((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d
+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)
```

```
/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*cos(f*
x+e)*b*c*d^2+cos(f*x+e)^2*((a-b)/(a+b))^(1/2)*a*d^3-cos(f*x+e)*((a-b)/(a+b)
)^(1/2)*a*d^3+cos(f*x+e)*((a-b)/(a+b))^(1/2)*b*d^3-2*((b+a*cos(f*x+e))/(1+c
os(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*Ellip
ticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c
+d))^(1/2)/((a-b)/(a+b))^(1/2))*sin(f*x+e)*b*c^3+((b+a*cos(f*x+e))/(1+cos(f
*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF
((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(
1/2))*sin(f*x+e)*b*c^3+((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*
cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a
+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*a*d^3-2*(
(b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e
))/(c+d))^(1/2)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-
(a+b)/(a-b),((c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*sin(f*x+e)*a*d^3-b*d^3
*((a-b)/(a+b))^(1/2)+b*c*d^2*((a-b)/(a+b))^(1/2)-2*((b+a*cos(f*x+e))/(1+cos
(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*Ellipti
cPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d
))^(1/2)/((a-b)/(a+b))^(1/2))*sin(f*x+e)*cos(f*x+e)*a*d^3-2*((b+a*cos(f*x+e
))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2
)*EllipticPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((
c-d)/(c+d))^(1/2)/((a-b)/(a+b))^(1/2))*sin(f*x+e)*cos(f*x+e)*b*c^3+((b+a*co
s(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d
))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c
-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*cos(f*x+e)*b*c^3-cos(f*x+e)^2*((a-b)/(a+
b))^(1/2)*a*c*d^2+cos(f*x+e)*((a-b)/(a+b))^(1/2)*a*c*d^2-cos(f*x+e)*((a-b)/
(a+b))^(1/2)*b*c*d^2+((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*co
s(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b
))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*cos(f*x+e)*
a*d^3-((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+co
s(f*x+e))/(c+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*
x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*cos(f*x+e)*b*d^3+2*Ellipti
cPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d
))^(1/2)/((a-b)/(a+b))^(1/2))*a*c^2*d*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b
))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)+2*Ellipti
cPi((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),-(a+b)/(a-b),((c-d)/(c+d
))^(1/2)/((a-b)/(a+b))^(1/2))*b*c*d^2*((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b
))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*sin(f*x+e)-((b+a*cos
(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d)
)^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-
d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*a*c^2*d-((b+a*cos(f*x+e))/(1+cos(f*x+e))/
(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+co
s(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*s
in(f*x+e)*a*c*d^2+((b+a*cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f
*x+e))/(1+cos(f*x+e))/(c+d))^(1/2)*EllipticF((-1+cos(f*x+e))*((a-b)/(a+b))^
(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*b*c^2*d+((b+a*
cos(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c
+d))^(1/2)*EllipticE((-1+cos(f*x+e))*((a-b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*
(c-d)/(a-b)/(c+d))^(1/2))*sin(f*x+e)*a*c*d^2-EllipticE((-1+cos(f*x+e))*((a-
b)/(a+b))^(1/2)/sin(f*x+e),((a+b)*(c-d)/(a-b)/(c+d))^(1/2))*b*c*d^2*((b+a*c
os(f*x+e))/(1+cos(f*x+e))/(a+b))^(1/2)*((d+c*cos(f*x+e))/(1+cos(f*x+e))/(c+
d))^(1/2)*sin(f*x+e))*cos(f*x+e)*((d+c*cos(f*x+e))/cos(f*x+e))^(1/2)*((b+a*
cos(f*x+e))/cos(f*x+e))^(1/2)/sin(f*x+e)/(d+c*cos(f*x+e))/(b+a*cos(f*x+e))/
c/(c-d)/((a-b)/(a+b))^(1/2)/(c+d)/(a*d-b*c)
```

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

$$\int \frac{1}{\sqrt{b\sec\left(fx+e\right)+a}\left(d\sec\left(fx+e\right)+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))^(3/2)/(a+b*sec(f*x+e))^(1/2),x, algorithm="max
ima")
```

```
[Out] integrate(1/(sqrt(b*sec(f*x + e) + a)*(d*sec(f*x + e) + c)^(3/2)), x)
```

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

$$\int \frac{1}{\sqrt{a+\frac{b}{\cos\left(e+f\,x\right)}}\,{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(3/2)),x)
```

```
[Out] int(1/((a + b/cos(e + f*x))^(1/2)*(c + d/cos(e + f*x))^(3/2)), x)
```

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

$$\int \frac{1}{\sqrt{a + b \sec{\left(e + f x \right)}} \left(c + d \sec{\left(e + f x \right)}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c+d*sec(f*x+e))**(3/2)/(a+b*sec(f*x+e))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*sec(e + f*x))*(c + d*sec(e + f*x))**(3/2)), x)
```

3.221 $\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{\sqrt[3]{c+d\sec(e+fx)}}\,dx$

Optimal. Leaf size=89

$$\frac{\sqrt[3]{a+b\sec(e+fx)}\,\sqrt[3]{c\cos(e+fx)+d}\,\mathrm{Int}\left(\frac{\sqrt[3]{a\cos(e+fx)+b}}{\sqrt[3]{c\cos(e+fx)+d}},x\right)}{\sqrt[3]{a\cos(e+fx)+b}\,\sqrt[3]{c+d\sec(e+fx)}}$$

```
[Out] (d+c*cos(f*x+e))^(1/3)*(a+b*sec(f*x+e))^(1/3)*Unintegrable((b+a*cos(f*x+e))
^(1/3)/(d+c*cos(f*x+e))^(1/3),x)/(b+a*cos(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(1
/3)
```

Rubi [A] time = 0.19, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{\sqrt[3]{c+d\sec(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(1/3),x]
```

```
[Out] ((d + c*Cos[e + f*x])^(1/3)*(a + b*Sec[e + f*x])^(1/3)*Defer[Int][(b + a*Co
s[e + f*x])^(1/3)/(d + c*Cos[e + f*x])^(1/3), x])/((b + a*Cos[e + f*x])^(1/
3)*(c + d*Sec[e + f*x])^(1/3))
```

Rubi steps

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{\sqrt[3]{c+d\sec(e+fx)}}\,dx=\frac{\left(\sqrt[3]{d+c\cos(e+fx)}\,\sqrt[3]{a+b\sec(e+fx)}\right)\int \frac{\sqrt[3]{b+a\cos(e+fx)}}{\sqrt[3]{d+c\cos(e+fx)}}\,dx}{\sqrt[3]{b+a\cos(e+fx)}\,\sqrt[3]{c+d\sec(e+fx)}}$$

Mathematica [A] time = 2.37, size = 0, normalized size = 0.00

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{\sqrt[3]{c+d\sec(e+fx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(1/3),x]
```

```
[Out] Integrate[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(1/3), x]
```

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((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(1/3),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{1}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(1/3),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(1/3)/(d*sec(f*x + e) + c)^(1/3), x)
```

maple [A] time = 1.60, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec \left(fx+e\right)\right)^{\frac{1}{3}}}{\left(c+d\sec \left(fx+e\right)\right)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(1/3),x)
```

```
[Out] int((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(1/3),x)
```

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

$$\int \frac{\left(b\sec \left(fx+e\right)+a\right)^{\frac{1}{3}}}{\left(d\sec \left(fx+e\right)+c\right)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(1/3),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(1/3)/(d*sec(f*x + e) + c)^(1/3), x)
```

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

$$\int \frac{{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)}^{1/3}}{{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)}^{1/3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(1/3)/(c + d/cos(e + f*x))^(1/3),x)
```

```
[Out] int((a + b/cos(e + f*x))^(1/3)/(c + d/cos(e + f*x))^(1/3), x)
```

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

$$\int \frac{\sqrt[3]{a+b\sec \left(e+fx\right)}}{\sqrt[3]{c+d\sec \left(e+fx\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(1/3)/(c+d*sec(f*x+e))**(1/3),x)
```

```
[Out] Integral((a + b*sec(e + f*x))**(1/3)/(c + d*sec(e + f*x))**(1/3), x)
```

3.222 $\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{4/3}},x\right)$$

```
[Out] Unintegrable((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(4/3),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{4/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(4/3),x]
[Out] Defer[Int][(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(4/3), x]
```

Rubi steps

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{4/3}}\,dx = \int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{4/3}}\,dx$$

Mathematica [A] time = 52.11, size = 0, normalized size = 0.00

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{4/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(4/3),x]
[Out] Integrate[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(4/3), x]
```

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((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(4/3),x, algorithm="frica
s")
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{1}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(4/3),x, algorithm="giac"
)
```

[Out] integrate((b*sec(f*x + e) + a)^(1/3)/(d*sec(f*x + e) + c)^(4/3), x)

maple [A] time = 1.33, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec\left(fx+e\right)\right)^{\frac{1}{3}}}{\left(c+d\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(4/3),x)

[Out] int((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(4/3),x)

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{1}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(4/3),x, algorithm="maxima")

[Out] integrate((b*sec(f*x + e) + a)^(1/3)/(d*sec(f*x + e) + c)^(4/3), x)

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{1/3}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b/cos(e + f*x))^(1/3)/(c + d/cos(e + f*x))^(4/3),x)

[Out] int((a + b/cos(e + f*x))^(1/3)/(c + d/cos(e + f*x))^(4/3), x)

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

$$\int \frac{\sqrt[3]{a+b\sec\left(e+fx\right)}}{\left(c+d\sec\left(e+fx\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*sec(f*x+e))**(1/3)/(c+d*sec(f*x+e))**(4/3),x)

[Out] Integral((a + b*sec(e + f*x))**(1/3)/(c + d*sec(e + f*x))**(4/3), x)

3.223 $\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{7/3}}\,dx$

Optimal. Leaf size=32

$$\mathrm{Int}\left(\frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{7/3}},x\right)$$

```
[Out] Unintegrable((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(7/3),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{7/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(7/3),x]
[Out] Defer[Int][(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(7/3), x]
```

Rubi steps

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{7/3}}\,dx = \int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{7/3}}\,dx$$

Mathematica [A] time = 89.28, size = 0, normalized size = 0.00

$$\int \frac{\sqrt[3]{a+b\sec(e+fx)}}{(c+d\sec(e+fx))^{7/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(7/3),x]
[Out] Integrate[(a + b*Sec[e + f*x])^(1/3)/(c + d*Sec[e + f*x])^(7/3), x]
```

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((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(7/3),x, algorithm="frica
s")
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{1}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(7/3),x, algorithm="giac"
)
```

[Out] integrate((b*sec(f*x + e) + a)^(1/3)/(d*sec(f*x + e) + c)^(7/3), x)

maple [A] time = 1.26, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec\left(fx+e\right)\right)^{\frac{1}{3}}}{\left(c+d\sec\left(fx+e\right)\right)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(7/3),x)

[Out] int((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(7/3),x)

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{1}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*sec(f*x+e))^(1/3)/(c+d*sec(f*x+e))^(7/3),x, algorithm="maxima")

[Out] integrate((b*sec(f*x + e) + a)^(1/3)/(d*sec(f*x + e) + c)^(7/3), x)

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.03

Hanged

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b/cos(e + f*x))^(1/3)/(c + d/cos(e + f*x))^(7/3),x)

[Out] \text{Hanged}

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+b*sec(f*x+e))**(1/3)/(c+d*sec(f*x+e))**(7/3),x)

[Out] Timed out

3.224 $\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{2/3}}\,dx$

Optimal. Leaf size=89

$$\frac{(a+b\sec(e+fx))^{2/3}(c\cos(e+fx)+d)^{2/3}\text{Int}\left(\frac{(a\cos(e+fx)+b)^{2/3}}{(c\cos(e+fx)+d)^{2/3}},x\right)}{(a\cos(e+fx)+b)^{2/3}(c+d\sec(e+fx))^{2/3}}$$

```
[Out] (d+c*cos(f*x+e))^(2/3)*(a+b*sec(f*x+e))^(2/3)*Unintegrable((b+a*cos(f*x+e))
^(2/3)/(d+c*cos(f*x+e))^(2/3),x)/(b+a*cos(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(2
/3)
```

Rubi [A] time = 0.22, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{2/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(2/3),x]
```

```
[Out] ((d + c*Cos[e + f*x])^(2/3)*(a + b*Sec[e + f*x])^(2/3)*Defer[Int][(b + a*Co
s[e + f*x])^(2/3)/(d + c*Cos[e + f*x])^(2/3), x])/((b + a*Cos[e + f*x])^(2/
3)*(c + d*Sec[e + f*x])^(2/3))
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{2/3}}\,dx = \frac{\left((d+c\cos(e+fx))^{2/3}(a+b\sec(e+fx))^{2/3}\right)\int \frac{(b+a\cos(e+fx))^{2/3}}{(d+c\cos(e+fx))^{2/3}}\,dx}{(b+a\cos(e+fx))^{2/3}(c+d\sec(e+fx))^{2/3}}$$

Mathematica [A] time = 2.61, size = 0, normalized size = 0.00

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{2/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(2/3),x]
```

```
[Out] Integrate[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(2/3), x]
```

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((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(2/3),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{2}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(2/3),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(2/3)/(d*sec(f*x + e) + c)^(2/3), x)
```

maple [A] time = 1.45, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec\left(fx+e\right)\right)^{\frac{2}{3}}}{\left(c+d\sec\left(fx+e\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(2/3),x)
```

```
[Out] int((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(2/3),x)
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{2}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(2/3),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(2/3)/(d*sec(f*x + e) + c)^(2/3), x)
```

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

$$\int \frac{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{2/3}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^{2/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(2/3)/(c + d/cos(e + f*x))^(2/3),x)
```

```
[Out] int((a + b/cos(e + f*x))^(2/3)/(c + d/cos(e + f*x))^(2/3), x)
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^{\frac{2}{3}}}{\left(c+d\sec\left(e+fx\right)\right)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(2/3)/(c+d*sec(f*x+e))**(2/3),x)
```

```
[Out] Integral((a + b*sec(e + f*x))**(2/3)/(c + d*sec(e + f*x))**(2/3), x)
```

3.225 $\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{5/3}}\,dx$

Optimal. Leaf size=32

$$\mathrm{Int}\left(\frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{5/3}},x\right)$$

```
[Out] Unintegrable((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(5/3),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{5/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(5/3),x]
[Out] Defer[Int][(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(5/3), x]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{5/3}}\,dx=\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{5/3}}\,dx$$

Mathematica [A] time = 53.31, size = 0, normalized size = 0.00

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{5/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(5/3),x]
[Out] Integrate[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(5/3), x]
```

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((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(5/3),x, algorithm="frica
s")
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{2}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{5}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(5/3),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(2/3)/(d*sec(f*x + e) + c)^(5/3), x)
```

maple [A] time = 1.27, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec\left(fx+e\right)\right)^{\frac{2}{3}}}{\left(c+d\sec\left(fx+e\right)\right)^{\frac{5}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(5/3),x)
[Out] int((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(5/3),x)
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{2}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{5}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(5/3),x, algorithm="maxim
a")
[Out] integrate((b*sec(f*x + e) + a)^(2/3)/(d*sec(f*x + e) + c)^(5/3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{2/3}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^{5/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(2/3)/(c + d/cos(e + f*x))^(5/3),x)
[Out] int((a + b/cos(e + f*x))^(2/3)/(c + d/cos(e + f*x))^(5/3), x)
```

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

$$\int \frac{\left(a+b\sec\left(e+fx\right)\right)^{\frac{2}{3}}}{\left(c+d\sec\left(e+fx\right)\right)^{\frac{5}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))**(2/3)/(c+d*sec(f*x+e))**(5/3),x)
[Out] Integral((a + b*sec(e + f*x))**(2/3)/(c + d*sec(e + f*x))**(5/3), x)
```

3.226 $\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{8/3}}\,dx$

Optimal. Leaf size=32

$$\operatorname{Int}\left(\frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{8/3}},x\right)$$

[Out] Unintegrable((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(8/3),x)

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{8/3}}\,dx$$

Verification is Not applicable to the result.

[In] Int[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(8/3),x]

[Out] Defer[Int][(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(8/3), x]

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{8/3}}\,dx=\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{8/3}}\,dx$$

Mathematica [A] time = 92.81, size = 0, normalized size = 0.00

$$\int \frac{(a+b\sec(e+fx))^{2/3}}{(c+d\sec(e+fx))^{8/3}}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(8/3),x]

[Out] Integrate[(a + b*Sec[e + f*x])^(2/3)/(c + d*Sec[e + f*x])^(8/3), x]

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((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(8/3),x, algorithm="frica
s")

[Out] Timed out

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{2}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{8}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(8/3),x, algorithm="giac"
)

```
[Out] integrate((b*sec(f*x + e) + a)^(2/3)/(d*sec(f*x + e) + c)^(8/3), x)
```

maple [A] time = 1.37, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec\left(fx+e\right)\right)^{\frac{2}{3}}}{\left(c+d\sec\left(fx+e\right)\right)^{\frac{8}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(8/3),x)
[Out] int((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(8/3),x)
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{2}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{8}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(2/3)/(c+d*sec(f*x+e))^(8/3),x, algorithm="maxim
a")
[Out] integrate((b*sec(f*x + e) + a)^(2/3)/(d*sec(f*x + e) + c)^(8/3), x)
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.03

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(2/3)/(c + d/cos(e + f*x))^(8/3),x)
[Out] \text{Hanged}
```

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+b*sec(f*x+e))**(2/3)/(c+d*sec(f*x+e))**(8/3),x)
[Out] Timed out
```

3.227 $\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{4/3}}\,dx$

Optimal. Leaf size=89

$$\frac{(a+b\sec(e+fx))^{4/3}(c\cos(e+fx)+d)^{4/3}\mathrm{Int}\left(\frac{(a\cos(e+fx)+b)^{4/3}}{(c\cos(e+fx)+d)^{4/3}},x\right)}{(a\cos(e+fx)+b)^{4/3}(c+d\sec(e+fx))^{4/3}}$$

```
[Out] (d+c*cos(f*x+e))^(4/3)*(a+b*sec(f*x+e))^(4/3)*Unintegrable((b+a*cos(f*x+e))
^(4/3)/(d+c*cos(f*x+e))^(4/3),x)/(b+a*cos(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(4
/3)
```

Rubi [A] time = 0.22, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{4/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(4/3),x]
```

```
[Out] ((d + c*Cos[e + f*x])^(4/3)*(a + b*Sec[e + f*x])^(4/3)*Defer[Int][(b + a*Co
s[e + f*x])^(4/3)/(d + c*Cos[e + f*x])^(4/3), x])/((b + a*Cos[e + f*x])^(4/
3)*(c + d*Sec[e + f*x])^(4/3))
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{4/3}}\,dx = \frac{\left((d+c\cos(e+fx))^{4/3}(a+b\sec(e+fx))^{4/3}\right)\int \frac{(b+a\cos(e+fx))^{4/3}}{(d+c\cos(e+fx))^{4/3}}\,dx}{(b+a\cos(e+fx))^{4/3}(c+d\sec(e+fx))^{4/3}}$$

Mathematica [A] time = 62.59, size = 0, normalized size = 0.00

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{4/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(4/3),x]
```

```
[Out] Integrate[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(4/3), x]
```

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((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(4/3),x, algorithm="frica
s")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{4}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(4/3),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(4/3)/(d*sec(f*x + e) + c)^(4/3), x)
```

maple [A] time = 1.34, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}{\left(c+d\sec\left(fx+e\right)\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(4/3),x)
```

```
[Out] int((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(4/3),x)
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{4}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(4/3),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(4/3)/(d*sec(f*x + e) + c)^(4/3), x)
```

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

$$\int \frac{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{4/3}}{\left(c+\frac{d}{\cos\left(e+f\,x\right)}\right)^{4/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(4/3)/(c + d/cos(e + f*x))^(4/3),x)
```

```
[Out] int((a + b/cos(e + f*x))^(4/3)/(c + d/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((a+b*sec(f*x+e))**(4/3)/(c+d*sec(f*x+e))**(4/3),x)
```

```
[Out] Timed out
```

3.228 $\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{7/3}}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{7/3}},x\right)$$

```
[Out] Unintegrable((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(7/3),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{7/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(7/3),x]
[Out] Defer[Int][(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(7/3), x]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{7/3}}\,dx=\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{7/3}}\,dx$$

Mathematica [A] time = 102.05, size = 0, normalized size = 0.00

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{7/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(7/3),x]
[Out] Integrate[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(7/3), x]
```

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((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(7/3),x, algorithm="frica
s")
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{4}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(7/3),x, algorithm="giac"
)
```

```
[Out] integrate((b*sec(f*x + e) + a)^(4/3)/(d*sec(f*x + e) + c)^(7/3), x)
```

maple [A] time = 1.27, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sec\left(fx+e\right)\right)^{\frac{4}{3}}}{\left(c+d\sec\left(fx+e\right)\right)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(7/3),x)
```

```
[Out] int((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(7/3),x)
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{4}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(7/3),x, algorithm="maxim
a")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(4/3)/(d*sec(f*x + e) + c)^(7/3), x)
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.03

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(4/3)/(c + d/cos(e + f*x))^(7/3),x)
```

```
[Out] \text{Hanged}
```

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+b*sec(f*x+e))**(4/3)/(c+d*sec(f*x+e))**(7/3),x)
```

```
[Out] Timed out
```

3.229 $\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{10/3}}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{10/3}},x\right)$$

```
[Out] Unintegrable((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(10/3),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{10/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(10/3),x]
[Out] Defer[Int][(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(10/3), x]
```

Rubi steps

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{10/3}}\,dx = \int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{10/3}}\,dx$$

Mathematica [A] time = 148.17, size = 0, normalized size = 0.00

$$\int \frac{(a+b\sec(e+fx))^{4/3}}{(c+d\sec(e+fx))^{10/3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(10/3),x]
[Out] Integrate[(a + b*Sec[e + f*x])^(4/3)/(c + d*Sec[e + f*x])^(10/3), x]
```

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((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(10/3),x, algorithm="fric
as")
[Out] Timed out
```

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

$$\int \frac{\left(b\sec\left(fx+e\right)+a\right)^{\frac{4}{3}}}{\left(d\sec\left(fx+e\right)+c\right)^{\frac{10}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(10/3),x, algorithm="giac
")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(4/3)/(d*sec(f*x + e) + c)^(10/3), x)
```

maple [A] time = 1.32, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\sec\left(fx + e\right)\right)^{\frac{4}{3}}}{\left(c + d\sec\left(fx + e\right)\right)^{\frac{10}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(10/3),x)
```

```
[Out] int((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(10/3),x)
```

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

$$\int \frac{\left(b\sec\left(fx + e\right) + a\right)^{\frac{4}{3}}}{\left(d\sec\left(fx + e\right) + c\right)^{\frac{10}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sec(f*x+e))^(4/3)/(c+d*sec(f*x+e))^(10/3),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*sec(f*x + e) + a)^(4/3)/(d*sec(f*x + e) + c)^(10/3), x)
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.03

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b/cos(e + f*x))^(4/3)/(c + d/cos(e + f*x))^(10/3),x)
```

```
[Out] \text{Hanged}
```

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+b*sec(f*x+e))**(4/3)/(c+d*sec(f*x+e))**(10/3),x)
```

```
[Out] Timed out
```

3.230 $\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))^m\,dx$

Optimal. Leaf size=106

$$-\frac{\tan(e+fx)(\sec(e+fx)+1)^{-m-\frac{1}{2}}(a\sec(e+fx)+a)^m F_1\left(np;\frac{1}{2},\frac{1}{2}-m;np+1;\sec(e+fx),-\sec(e+fx)\right)(c(}{fnp\sqrt{1-\sec(e+fx)}}$$

```
[Out] -AppellF1(n*p,1/2-m,1/2,n*p+1,-sec(f*x+e),sec(f*x+e))*(c*(d*sec(f*x+e))^p)^
n*(1+sec(f*x+e))^(-1/2-m)*(a+a*sec(f*x+e))^m*tan(f*x+e)/f/n/p/(1-sec(f*x+e)
)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {3948, 3828, 3827, 133}

$$-\frac{\tan(e+fx)(\sec(e+fx)+1)^{-m-\frac{1}{2}}(a\sec(e+fx)+a)^m F_1\left(np;\frac{1}{2},\frac{1}{2}-m;np+1;\sec(e+fx),-\sec(e+fx)\right)(c(}{fnp\sqrt{1-\sec(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x])^m,x]
```

```
[Out] -((AppellF1[n*p, 1/2, 1/2 - m, 1 + n*p, Sec[e + f*x], -Sec[e + f*x]]*(c*(d*
Sec[e + f*x])^p)^n*(1 + Sec[e + f*x])^(-1/2 - m)*(a + a*Sec[e + f*x])^m*Tan
[e + f*x])/(f*n*p*Sqrt[1 - Sec[e + f*x]]))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 3827

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))^(m_), x_Symbol] :> Dist[(a^2*d*Cot[e + f*x])/(f*Sqrt[a + b*Csc[e + f*
x]]*Sqrt[a - b*Csc[e + f*x]]), Subst[Int[((d*x)^(n - 1)*(a + b*x)^(m - 1/2)
)/Sqrt[a - b*x], x], x, Csc[e + f*x]], x] /; FreeQ[{a, b, d, e, f, m, n}, x
] && EqQ[a^2 - b^2, 0] &&  !IntegerQ[m] && GtQ[a, 0]
```

Rule 3828

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))^(m_), x_Symbol] :> Dist[(a^IntPart[m]*(a + b*Csc[e + f*x])^FracPart[m
])/(1 + (b*Csc[e + f*x])/a)^FracPart[m], Int[(1 + (b*Csc[e + f*x])/a)^m*(d*
Csc[e + f*x])^n, x], x] /; FreeQ[{a, b, d, e, f, m, n}, x] && EqQ[a^2 - b^2
, 0] &&  !IntegerQ[m] &&  !GtQ[a, 0]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] &&  !IntegerQ[n]
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))^m\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}(a+$$

$$= \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n (1+\sec(e+fx))^{-m}(a+\right.$$

$$= -\frac{\left(d(d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n (1+\sec(e+fx))^{-\frac{1}{2}-}\right.}{}$$

$$= -\frac{F_1\left(np;\frac{1}{2},\frac{1}{2}-m;1+np;\sec(e+fx),-\sec(e+fx)\right)\left(c(d\sec(e\right.}{fnp\sqrt{1-}}$$

Mathematica [B] time = 14.61, size = 2425, normalized size = 22.88

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x])^m,x]
```

```
[Out] (3*2^(1 + m)*AppellF1[1/2, m + n*p, 1 - n*p, 3/2, Tan[(e + f*x)/2]^2, -Tan[
(e + f*x)/2]^2]*(Sec[(e + f*x)/2]^2)^(-1 + n*p)*(Cos[(e + f*x)/2]^2*Sec[e +
 f*x])^(m + n*p)*(c*(d*Sec[e + f*x])^p)^n*(a*(1 + Sec[e + f*x]))^m*Tan[(e +
 f*x)/2])/(f*(3*AppellF1[1/2, m + n*p, 1 - n*p, 3/2, Tan[(e + f*x)/2]^2, -T
an[(e + f*x)/2]^2] + 2*((-1 + n*p)*AppellF1[3/2, m + n*p, 2 - n*p, 5/2, Tan
[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + (m + n*p)*AppellF1[3/2, 1 + m + n*p
, 1 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^
2)*((3*2^m*AppellF1[1/2, m + n*p, 1 - n*p, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e
 + f*x)/2]^2]*(Sec[(e + f*x)/2]^2)^(n*p)*(Cos[(e + f*x)/2]^2*Sec[e + f*x])^
(m + n*p))/(3*AppellF1[1/2, m + n*p, 1 - n*p, 3/2, Tan[(e + f*x)/2]^2, -Tan
[(e + f*x)/2]^2] + 2*((-1 + n*p)*AppellF1[3/2, m + n*p, 2 - n*p, 5/2, Tan[(
e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + (m + n*p)*AppellF1[3/2, 1 + m + n*p,
1 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2)
 + (3*2^(1 + m)*(-1 + n*p)*AppellF1[1/2, m + n*p, 1 - n*p, 3/2, Tan[(e + f*
x)/2]^2, -Tan[(e + f*x)/2]^2]*(Sec[(e + f*x)/2]^2)^(-1 + n*p)*(Cos[(e + f*x
)/2]^2*Sec[e + f*x])^(m + n*p)*Tan[(e + f*x)/2]^2)/(3*AppellF1[1/2, m + n*p
, 1 - n*p, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + n*p)*Ap
pellF1[3/2, m + n*p, 2 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]
 + (m + n*p)*AppellF1[3/2, 1 + m + n*p, 1 - n*p, 5/2, Tan[(e + f*x)/2]^2, -
Tan[(e + f*x)/2]^2])*Tan[(e + f*x)/2]^2) + (3*2^(1 + m)*(Sec[(e + f*x)/2]^2
)^(-1 + n*p)*(Cos[(e + f*x)/2]^2*Sec[e + f*x])^(m + n*p)*Tan[(e + f*x)/2]*(
-1/3*((1 - n*p)*AppellF1[3/2, m + n*p, 2 - n*p, 5/2, Tan[(e + f*x)/2]^2, -T
an[(e + f*x)/2]^2]*Sec[(e + f*x)/2]^2*Tan[(e + f*x)/2]) + ((m + n*p)*Appell
F1[3/2, 1 + m + n*p, 1 - n*p, 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 + n*p, 1 - n*p
, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + n*p)*AppellF1[3/
2, m + n*p, 2 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + (m + n
*p)*AppellF1[3/2, 1 + m + n*p, 1 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e +
f*x)/2]^2])*Tan[(e + f*x)/2]^2) - (3*2^(1 + m)*AppellF1[1/2, m + n*p, 1 - n
*p, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Sec[(e + f*x)/2]^2)^(-1
+ n*p)*(Cos[(e + f*x)/2]^2*Sec[e + f*x])^(m + n*p)*Tan[(e + f*x)/2]*(2*((-1
 + n*p)*AppellF1[3/2, m + n*p, 2 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e +
f*x)/2]^2] + (m + n*p)*AppellF1[3/2, 1 + m + n*p, 1 - n*p, 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 - n*p)*AppellF1[3/2, m + n*p, 2 - n*p, 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 + n*p)*AppellF1[
3/2, 1 + m + n*p, 1 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*Se
```

```
c[(e + f*x)/2]^2*Tan[(e + f*x)/2])/3) + 2*Tan[(e + f*x)/2]^2*((-1 + n*p)*((
-3*(2 - n*p)*AppellF1[5/2, m + n*p, 3 - n*p, 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*(m + n*p)*Appel
lF1[5/2, 1 + m + n*p, 2 - n*p, 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 + n*p)*((-3*(1 - n*p)*Appell
F1[5/2, 1 + m + n*p, 2 - n*p, 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 + n*p)*AppellF1[5/2, 2
+ m + n*p, 1 - n*p, 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 + n*p, 1 - n*p, 3/2, T
an[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + n*p)*AppellF1[3/2, m + n
*p, 2 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + (m + n*p)*Appe
llF1[3/2, 1 + m + n*p, 1 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^
2])*Tan[(e + f*x)/2]^2)^2 + (3*2^(1 + m)*(m + n*p)*AppellF1[1/2, m + n*p, 1
 - n*p, 3/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2]*(Sec[(e + f*x)/2]^2)^
(-1 + n*p)*(Cos[(e + f*x)/2]^2*Sec[e + f*x])^(-1 + m + n*p)*Tan[(e + f*x)/2
]*(-(Cos[(e + f*x)/2]*Sec[e + f*x]*Sin[(e + f*x)/2]) + Cos[(e + f*x)/2]^2*S
ec[e + f*x]*Tan[e + f*x]))/(3*AppellF1[1/2, m + n*p, 1 - n*p, 3/2, Tan[(e +
 f*x)/2]^2, -Tan[(e + f*x)/2]^2] + 2*((-1 + n*p)*AppellF1[3/2, m + n*p, 2 -
 n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2] + (m + n*p)*AppellF1[3/
2, 1 + m + n*p, 1 - n*p, 5/2, Tan[(e + f*x)/2]^2, -Tan[(e + f*x)/2]^2])*Tan
[(e + f*x)/2]^2)))
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}\left(a\sec\left(fx+e\right)+a\right)^{m},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^m,x, algorithm="fricas")
[Out] integral(((d*sec(f*x + e))^p*c)^n*(a*sec(f*x + e) + a)^m, x)
```

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

$$\int\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}\left(a\sec\left(fx+e\right)+a\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^m,x, algorithm="giac")
[Out] integrate(((d*sec(f*x + e))^p*c)^n*(a*sec(f*x + e) + a)^m, x)
```

maple [F] time = 2.51, size = 0, normalized size = 0.00

$$\int\left(c\left(d\sec\left(fx+e\right)\right)^{p}\right)^{n}\left(a+a\sec\left(fx+e\right)\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^m,x)
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^m,x)
```

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

$$\int\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}\left(a\sec\left(fx+e\right)+a\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^m,x, algorithm="maxima")
```

[Out] integrate(((d*sec(f*x + e))^p*c)^n*(a*sec(f*x + e) + a)^m, x)

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

$$\int \left(c\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^p\right)^n \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^m \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x))^m,x)

[Out] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x))^m, x)

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

$$\int \left(a\left(\sec\left(e+fx\right)+1\right)\right)^m \left(c\left(d\sec\left(e+fx\right)\right)^p\right)^n \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+a*sec(f*x+e))**m,x)

[Out] Integral((a*(sec(e + f*x) + 1))**m*(c*(d*sec(e + f*x))**p)**n, x)

3.231 $\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))^3\,dx$

Optimal. Leaf size=275

$$-\frac{a^3(4np+1)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+\frac{a^3(4np}{}$$

```
[Out] a^3*(4*n*p+7)*hypergeom([1/2, -1/2*n*p],[-1/2*n*p+1],cos(f*x+e)^2)*(c*(d*se
c(f*x+e))^p)^n*sin(f*x+e)/f/n/p/(n*p+2)/(sin(f*x+e)^2)^(1/2)-a^3*(4*n*p+1)*
cos(f*x+e)*hypergeom([1/2, -1/2*n*p+1/2],[-1/2*n*p+3/2],cos(f*x+e)^2)*(c*(d
*sec(f*x+e))^p)^n*sin(f*x+e)/f/(-n^2*p^2+1)/(sin(f*x+e)^2)^(1/2)+a^3*(2*n*p
+5)*(c*(d*sec(f*x+e))^p)^n*tan(f*x+e)/f/(n*p+1)/(n*p+2)+(c*(d*sec(f*x+e))^p
)^n*(a^3+a^3*sec(f*x+e))*tan(f*x+e)/f/(n*p+2)
```

Rubi [A] time = 0.44, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3948, 3814, 3997, 3787, 3772, 2643}

$$-\frac{a^3(4np+1)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+\frac{a^3(4np}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (a^3*(7 + 4*n*p)*Hypergeometric2F1[1/2, -(n*p)/2, (2 - n*p)/2, Cos[e + f*x]
^2]*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*n*p*(2 + n*p)*Sqrt[Sin[e + f*
x]^2]) - (a^3*(1 + 4*n*p)*Cos[e + f*x]*Hypergeometric2F1[1/2, (1 - n*p)/2,
(3 - n*p)/2, Cos[e + f*x]^2]*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*(1 -
 n^2*p^2)*Sqrt[Sin[e + f*x]^2]) + (a^3*(5 + 2*n*p)*(c*(d*Sec[e + f*x])^p)^n
*Tan[e + f*x])/(f*(1 + n*p)*(2 + n*p)) + ((c*(d*Sec[e + f*x])^p)^n*(a^3 + a
^3*Sec[e + f*x])*Tan[e + f*x])/(f*(2 + n*p))
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 &&  !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] &&  !IntegerQ[n]
```

Rule 3787

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_)), x_Symbol] :> Dist[a, Int[(d*Csc[e + f*x])^n, x], x] + Dist[b/d, Int[
(d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, d, e, f, n}, x]
```

Rule 3814

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_)*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (
a_))^(m_), x_Symbol] :> -Simp[(b^2*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m - 2
)*(d*Csc[e + f*x])^n)/(f*(m + n - 1)), x] + Dist[b/(m + n - 1), Int[(a + b*
```

```
Csc[e + f*x])^(m - 2)*(d*Csc[e + f*x])^n*(b*(m + 2*n - 1) + a*(3*m + 2*n -
4)*Csc[e + f*x]), x], x] /; FreeQ[{a, b, d, e, f, n}, x] && EqQ[a^2 - b^2,
0] && GtQ[m, 1] && NeQ[m + n - 1, 0] && IntegerQ[2*m]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] &&  !IntegerQ[n]
```

Rule 3997

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> -Simp[(b*B*Cot[e
 + f*x]*(d*Csc[e + f*x])^n)/(f*(n + 1)), x] + Dist[1/(n + 1), Int[(d*Csc[e
+ f*x])^n*Simp[A*a*(n + 1) + B*b*n + (A*b + B*a)*(n + 1)*Csc[e + f*x], x],
x], x] /; FreeQ[{a, b, d, e, f, A, B}, x] && NeQ[A*b - a*B, 0] &&  !LeQ[n,
-1]
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))^3\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}(a+$$

$$= \frac{\left(c(d\sec(e+fx))^p\right)^n\left(a^3+a^3\sec(e+fx)\right)\tan(e+fx)}{f(2+np)} + \frac{\left(a(d\,\mathrm{se}\right.}{}$$

$$= \frac{a^3(5+2np)\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{f(1+np)(2+np)} + \frac{\left(c(d\sec(e+fx)\right)}{}$$

$$= \frac{a^3(5+2np)\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{f(1+np)(2+np)} + \frac{\left(c(d\sec(e+fx)\right)}{}$$

$$= \frac{a^3(5+2np)\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{f(1+np)(2+np)} + \frac{\left(c(d\sec(e+fx)\right)}{}$$

$$= \frac{a^3(7+4np)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+f\right.}{fnp(2+np)\sqrt{\sin^2(e+fx)}}$$

Mathematica [C] time = 2.31, size = 343, normalized size = 1.25

$$-ia^3 2^{np-3}\sec^6\left(\frac{1}{2}(e+fx)\right)(\sec(e+fx)+1)^3\left(\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}\right)^{np}\left(\frac{12e^{2i(e+fx)}\,{}_2F_1\left(1,-\frac{np}{2};\frac{np}{2}+2;-e^{2i(e+fx)}\right)}{f(np+2)\left(1+e^{2i(e+fx)}\right)}+\frac{8e^{3i(e+fx}}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x])^3,x]
```

```
[Out] (-I)*2^(-3 + n*p)*a^3*(E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x))))^(n*p)*((1
2*E^((2*I)*(e + f*x))*Hypergeometric2F1[1, -1/2*(n*p), 2 + (n*p)/2, -E^((2*
I)*(e + f*x))])/((1 + E^((2*I)*(e + f*x)))*f*(2 + n*p)) + (8*E^((3*I)*(e +
f*x))*Hypergeometric2F1[1, (-1 - n*p)/2, (5 + n*p)/2, -E^((2*I)*(e + f*x))]
```

```
)/((1 + E^((2*I)*(e + f*x)))^2*f*(3 + n*p)) + (6*E^(I*(e + f*x))*Hypergeome
tric2F1[1, (1 - n*p)/2, (3 + n*p)/2, -E^((2*I)*(e + f*x))])/(f + f*n*p) + (
(1 + E^((2*I)*(e + f*x)))*Hypergeometric2F1[1, 1 - (n*p)/2, 1 + (n*p)/2, -E
^((2*I)*(e + f*x))])/(f*n*p))*Sec[(e + f*x)/2]^6*Sec[e + f*x]^(-3 - n*p)*(c
*(d*Sec[e + f*x])^p)^n*(1 + Sec[e + f*x])^3
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^3\sec\left(fx+e\right)^3+3\,a^3\sec\left(fx+e\right)^2+3\,a^3\sec\left(fx+e\right)+a^3\right)\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] integral((a^3*sec(f*x + e)^3 + 3*a^3*sec(f*x + e)^2 + 3*a^3*sec(f*x + e) +
a^3)*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int\left(a\sec\left(fx+e\right)+a\right)^3\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] integrate((a*sec(f*x + e) + a)^3*((d*sec(f*x + e))^p*c)^n, x)
```

maple [F] time = 1.27, size = 0, normalized size = 0.00

$$\int\left(c\left(d\sec\left(fx+e\right)\right)^p\right)^n\left(a+a\sec\left(fx+e\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^3,x)
```

```
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^3,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((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int{\left(c\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^p\right)}^n\,{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x))^3,x)
```

```
[Out] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x))^3, x)
```

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

$$a^3\left(\int\left(c\left(d\sec\left(e+fx\right)\right)^p\right)^n\,dx+\int 3\left(c\left(d\sec\left(e+fx\right)\right)^p\right)^n\sec\left(e+fx\right)dx+\int 3\left(c\left(d\sec\left(e+fx\right)\right)^p\right)^n\sec^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+a*sec(f*x+e))**3,x)
```

```
[Out] a**3*(Integral((c*(d*sec(e + f*x))**p)**n, x) + Integral(3*(c*(d*sec(e + f*
x))**p)**n*sec(e + f*x), x) + Integral(3*(c*(d*sec(e + f*x))**p)**n*sec(e +
 f*x)**2, x) + Integral((c*(d*sec(e + f*x))**p)**n*sec(e + f*x)**3, x))
```

3.232 $\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))^2\,dx$

Optimal. Leaf size=205

$$-\frac{a^2(2np+1)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+\frac{2a^2\sin(}{}$$

```
[Out] 2*a^2*hypergeom([1/2, -1/2*n*p],[-1/2*n*p+1],cos(f*x+e)^2)*(c*(d*sec(f*x+e)
)^p)^n*sin(f*x+e)/f/n/p/(sin(f*x+e)^2)^(1/2)-a^2*(2*n*p+1)*cos(f*x+e)*hyper
geom([1/2, -1/2*n*p+1/2],[-1/2*n*p+3/2],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)^
n*sin(f*x+e)/f/(-n^2*p^2+1)/(sin(f*x+e)^2)^(1/2)+a^2*(c*(d*sec(f*x+e))^p)^n
*tan(f*x+e)/f/(n*p+1)
```

Rubi [A] time = 0.25, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {3948, 3788, 3772, 2643, 4046}

$$-\frac{a^2(2np+1)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+\frac{2a^2\sin(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (2*a^2*Hypergeometric2F1[1/2, -(n*p)/2, (2 - n*p)/2, Cos[e + f*x]^2]*(c*(d*
Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*n*p*Sqrt[Sin[e + f*x]^2]) - (a^2*(1 + 2
*n*p)*Cos[e + f*x]*Hypergeometric2F1[1/2, (1 - n*p)/2, (3 - n*p)/2, Cos[e +
 f*x]^2]*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*(1 - n^2*p^2)*Sqrt[Sin[e
 + f*x]^2]) + (a^2*(c*(d*Sec[e + f*x])^p)^n*Tan[e + f*x])/(f*(1 + n*p))
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 && !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] && !IntegerQ[n]
```

Rule 3788

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))^2, x_Symbol] :> Dist[(2*a*b)/d, Int[(d*Csc[e + f*x])^(n + 1), x], x]
+ Int[(d*Csc[e + f*x])^n*(a^2 + b^2*Csc[e + f*x]^2), x] /; FreeQ[{a, b, d,
e, f, n}, x]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] && !IntegerQ[n]
```

Rule 4046

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(m_.)*(csc[(e_.) + (f_.)*(x_)]^2*(C_.)
+ (A_)), x_Symbol] :> -Simp[(C*Cot[e + f*x]*(b*Csc[e + f*x])^m)/(f*(m + 1))
, x] + Dist[(C*m + A*(m + 1))/(m + 1), Int[(b*Csc[e + f*x])^m, x], x] /; Fr
eeQ[{b, e, f, A, C, m}, x] && NeQ[C*m + A*(m + 1), 0] &&  !LeQ[m, -1]
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))^2\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}(a+$$

$$= \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}\left(a^2\right.$$

$$= \frac{a^2\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{f(1+np)} + \frac{\left(2a^2\left(\frac{\cos(e+fx)}{d}\right)^{np}\left(c(d\sec\right.\right.}{}$$

$$= \frac{2a^2\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n\sin}{fnp\sqrt{\sin^2(e+fx)}}$$

$$= \frac{2a^2\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n\sin}{fnp\sqrt{\sin^2(e+fx)}}$$

Mathematica [C] time = 2.82, size = 299, normalized size = 1.46

$$-\frac{ia^2 2^{np-2}e^{-i(e+fx)}\sec^4\left(\frac{1}{2}(e+fx)\right)(\sec(e+fx)+1)^2\left(\frac{e^{i(e+fx)}}{1+e^{2i(e+fx)}}\right)^{np+1}\left(4np(np+1)e^{2i(e+fx)}\,{}_2F_1\left(1,-\frac{np}{2};\frac{np}{2}+2;-e^2\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x])^2,x]
```

```
[Out] ((-I)*2^(-2 + n*p)*a^2*(E^(I*(e + f*x))/(1 + E^((2*I)*(e + f*x))))^(1 + n*p
)*(4*E^((2*I)*(e + f*x))*n*p*(1 + n*p)*Hypergeometric2F1[1, -1/2*(n*p), 2 +
 (n*p)/2, -E^((2*I)*(e + f*x))] + (1 + E^((2*I)*(e + f*x)))*(2 + n*p)*(4*E^
(I*(e + f*x))*n*p*Hypergeometric2F1[1, (1 - n*p)/2, (3 + n*p)/2, -E^((2*I)*
(e + f*x))] + (1 + E^((2*I)*(e + f*x)))*(1 + n*p)*Hypergeometric2F1[1, 1 -
(n*p)/2, 1 + (n*p)/2, -E^((2*I)*(e + f*x))]))*Sec[(e + f*x)/2]^4*Sec[e + f*
x]^(-2 - n*p)*(c*(d*Sec[e + f*x])^p)^n*(1 + Sec[e + f*x])^2)/(E^(I*(e + f*x
))*f*n*p*(1 + n*p)*(2 + n*p))
```

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

$$\text{integral}\left(\left(a^2\sec\left(fx+e\right)^2+2\,a^2\sec\left(fx+e\right)+a^2\right)\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral((a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e) + a^2)*((d*sec(f*x + e))^
p*c)^n, x)
```

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

$$\int \left(a \sec \left(fx+e\right)+a\right)^{2} \left(\left(d \sec \left(fx+e\right)\right)^{p} c\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^2,x, algorithm="giac")
[Out] integrate((a*sec(f*x + e) + a)^2*((d*sec(f*x + e))^p*c)^n, x)
```

maple [F] time = 1.18, size = 0, normalized size = 0.00

$$\int \left(c \left(d \sec \left(fx+e\right)\right)^{p}\right)^{n} \left(a+a \sec \left(fx+e\right)\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^2,x)
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^2,x)
```

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

$$\int \left(a \sec \left(fx+e\right)+a\right)^{2} \left(\left(d \sec \left(fx+e\right)\right)^{p} c\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e))^2,x, algorithm="maxima")
[Out] integrate((a*sec(f*x + e) + a)^2*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int {\left(c\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^p\right)}^n\,{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x))^2,x)
[Out] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x))^2, x)
```

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

$$a^{2} \left(\int \left(c \left(d \sec{\left(e + f x \right)}\right)^{p}\right)^{n}\, dx + \int 2 \left(c \left(d \sec{\left(e + f x \right)}\right)^{p}\right)^{n} \sec{\left(e + f x \right)}\, dx + \int \left(c \left(d \sec{\left(e + f x \right)}\right)^{p}\right)^{n} \sec^{2}{\left(e + f x \right)}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+a*sec(f*x+e))**2,x)
[Out] a**2*(Integral((c*(d*sec(e + f*x))**p)**n, x) + Integral(2*(c*(d*sec(e + f*
x))**p)**n*sec(e + f*x), x) + Integral((c*(d*sec(e + f*x))**p)**n*sec(e + f
*x)**2, x))
```

3.233 $\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))\,dx$

Optimal. Leaf size=156

$$\frac{a\sin(e+fx)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{fnp\sqrt{\sin^2(e+fx)}}-\frac{a\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-n\right.}{f(1-np}$$

```
[Out] a*hypergeom([1/2, -1/2*n*p],[-1/2*n*p+1],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)
^n*sin(f*x+e)/f/n/p/(sin(f*x+e)^2)^(1/2)-a*cos(f*x+e)*hypergeom([1/2, -1/2*
n*p+1/2],[-1/2*n*p+3/2],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/f/(
-n*p+1)/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {3948, 3787, 3772, 2643}

$$\frac{a\sin(e+fx)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{fnp\sqrt{\sin^2(e+fx)}}-\frac{a\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-n\right.}{f(1-np}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x]),x]
```

```
[Out] (a*Hypergeometric2F1[1/2, -(n*p)/2, (2 - n*p)/2, Cos[e + f*x]^2]*(c*(d*Sec[
e + f*x])^p)^n*Sin[e + f*x])/(f*n*p*Sqrt[Sin[e + f*x]^2]) - (a*Cos[e + f*x]
*Hypergeometric2F1[1/2, (1 - n*p)/2, (3 - n*p)/2, Cos[e + f*x]^2]*(c*(d*Sec
[e + f*x])^p)^n*Sin[e + f*x])/(f*(1 - n*p)*Sqrt[Sin[e + f*x]^2])
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 &&  !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] &&  !IntegerQ[n]
```

Rule 3787

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_)), x_Symbol] :> Dist[a, Int[(d*Csc[e + f*x])^n, x], x] + Dist[b/d, Int[
(d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, d, e, f, n}, x]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] &&  !IntegerQ[n]
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+a\sec(e+fx))\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}(a$$

$$= \left(a(d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}$$

$$= \left(a\left(\frac{\cos(e+fx)}{d}\right)^{np}\left(c(d\sec(e+fx))^p\right)^n\right)\int\left(\frac{\cos(e+fx)}{d}\right)^{-np}$$

$$= \frac{a\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n \sin}{fnp\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.21, size = 124, normalized size = 0.79

$$\frac{a\sqrt{-\tan^2(e+fx)}\csc(e+fx)\left(c(d\sec(e+fx))^p\right)^n\left(np\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(np+1);\frac{1}{2}(np+3);\sec^2(e+fx)\right)+(np+1)\,c\right.}{fnp(np+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + a*Sec[e + f*x]),x]
```

```
[Out] (a*Csc[e + f*x]*((1 + n*p)*Cos[e + f*x]*Hypergeometric2F1[1/2, (n*p)/2, 1 +
 (n*p)/2, Sec[e + f*x]^2] + n*p*Hypergeometric2F1[1/2, (1 + n*p)/2, (3 + n*
p)/2, Sec[e + f*x]^2])*(c*(d*Sec[e + f*x])^p)^n*Sqrt[-Tan[e + f*x]^2])/(f*n
*p*(1 + n*p))
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a\sec\left(fx+e\right)+a\right)\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral((a*sec(f*x + e) + a)*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int \left(a\sec\left(fx+e\right)+a\right)\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((a*sec(f*x + e) + a)*((d*sec(f*x + e))^p*c)^n, x)
```

maple [F] time = 1.22, size = 0, normalized size = 0.00

$$\int \left(c\left(d\sec\left(fx+e\right)\right)^p\right)^n\left(a+a\sec\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e)),x)
```

```
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e)),x)
```

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

$$\int \left(a \sec \left(fx+e\right)+a\right) \left(\left(d \sec \left(fx+e\right)\right)^{p} c\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+a*sec(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate((a*sec(f*x + e) + a)*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int \left(c \left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{p}\right)^{n} \left(a+\frac{a}{\cos\left(e+f\,x\right)}\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x)),x)
```

```
[Out] int((c*(d/cos(e + f*x))^p)^n*(a + a/cos(e + f*x)), x)
```

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

$$a \left(\int \left(c \left(d \sec \left(e+fx\right)\right)^{p}\right)^{n}\, dx+\int \left(c \left(d \sec \left(e+fx\right)\right)^{p}\right)^{n} \sec \left(e+fx\right) dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+a*sec(f*x+e)),x)
```

```
[Out] a*(Integral((c*(d*sec(e + f*x))**p)**n, x) + Integral((c*(d*sec(e + f*x))**
p)**n*sec(e + f*x), x))
```

3.234 $\int \frac{(c(d\sec(e+fx))^p)^n}{a+a\sec(e+fx)}\,dx$

Optimal. Leaf size=208

$$-\frac{\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{af\sqrt{\sin^2(e+fx)}}+\frac{(1-np)\sin(e+fx)}{}$$

```
[Out] (c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/f/(a+a*sec(f*x+e))-cos(f*x+e)*hypergeom([
1/2, -1/2*n*p+1/2],[-1/2*n*p+3/2],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)^n*sin(
f*x+e)/a/f/(sin(f*x+e)^2)^(1/2)+(-n*p+1)*cos(f*x+e)^2*hypergeom([1/2, -1/2*
n*p+1],[-1/2*n*p+2],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/a/f/(-n
*p+2)/(sin(f*x+e)^2)^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {3948, 3820, 3787, 3772, 2643}

$$-\frac{\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{af\sqrt{\sin^2(e+fx)}}+\frac{(1-np)\sin(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n/(a + a*Sec[e + f*x]),x]
```

```
[Out] ((c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*(a + a*Sec[e + f*x])) - (Cos[e +
 f*x]*Hypergeometric2F1[1/2, (1 - n*p)/2, (3 - n*p)/2, Cos[e + f*x]^2]*(c*(
d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(a*f*Sqrt[Sin[e + f*x]^2]) + ((1 - n*p)*
Cos[e + f*x]^2*Hypergeometric2F1[1/2, (2 - n*p)/2, (4 - n*p)/2, Cos[e + f*x
]^2]*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(a*f*(2 - n*p)*Sqrt[Sin[e + f*x
]^2])
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 &&  !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] &&  !IntegerQ[n]
```

Rule 3787

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_)), x_Symbol] :> Dist[a, Int[(d*Csc[e + f*x])^n, x], x] + Dist[b/d, Int[
(d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, d, e, f, n}, x]
```

Rule 3820

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_)/(csc[(e_.) + (f_.)*(x_)]*(b_.) + (
a_)), x_Symbol] :> -Simp[(b*d*Cot[e + f*x]*(d*Csc[e + f*x])^(n - 1))/(a*f*(
a + b*Csc[e + f*x])), x] + Dist[(d*(n - 1))/(a*b), Int[(d*Csc[e + f*x])^(n
- 1)*(a - b*Csc[e + f*x]), x], x] /; FreeQ[{a, b, d, e, f, n}, x] && EqQ[a^
```

```
2 - b^2, 0]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{a+a\sec(e+fx)}\,dx=\left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{(d\sec(e+fx))^{np}}{a+a\sec(e+fx)}\,dx$$

$$=\frac{\left(c(d\sec(e+fx))^p\right)^n\sin(e+fx)}{f(a+a\sec(e+fx))}-\frac{\left(d(1-np)(d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right.}{a^2}$$

$$=\frac{\left(c(d\sec(e+fx))^p\right)^n\sin(e+fx)}{f(a+a\sec(e+fx))}+\frac{\left((1-np)(d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)}{a}$$

$$=\frac{\left(c(d\sec(e+fx))^p\right)^n\sin(e+fx)}{f(a+a\sec(e+fx))}+\frac{\left((1-np)\left(\frac{\cos(e+fx)}{d}\right)^{np}\left(c(d\sec(e+fx))^p\right)^n\right)\int\left(\right.}{a}$$

$$=\frac{\left(c(d\sec(e+fx))^p\right)^n\sin(e+fx)}{f(a+a\sec(e+fx))}-\frac{\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+\right.}{af\sqrt{\sin^2(e+}}$$

Mathematica [F] time = 1.18, size = 0, normalized size = 0.00

$$\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{a+a\sec(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n/(a + a*Sec[e + f*x]),x]
[Out] Integrate[(c*(d*Sec[e + f*x])^p)^n/(a + a*Sec[e + f*x]), x]
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}}{a\sec\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e)),x, algorithm="fricas")
[Out] integral(((d*sec(f*x + e))^p*c)^n/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e)),x, algorithm="giac")
[Out] integrate(((d*sec(f*x + e))^p*c)^n/(a*sec(f*x + e) + a), x)
```

maple [F] time = 1.14, size = 0, normalized size = 0.00

$$\int \frac{\left(c\left(d\sec\left(fx+e\right)\right)^{p}\right)^{n}}{a+a\sec\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e)),x)
[Out] int((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e)),x)
```

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

$$\int \frac{\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}}{a\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e)),x, algorithm="maxima")
[Out] integrate(((d*sec(f*x + e))^p*c)^n/(a*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(c\left(\frac{d}{\cos\left(e+fx\right)}\right)^{p}\right)^{n}}{a+\frac{a}{\cos\left(e+fx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n/(a + a/cos(e + f*x)),x)
[Out] int((c*(d/cos(e + f*x))^p)^n/(a + a/cos(e + f*x)), x)
```

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

$$\frac{\int \frac{\left(c\left(d\sec\left(e+fx\right)\right)^{p}\right)^{n}}{\sec\left(e+fx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n/(a+a*sec(f*x+e)),x)
[Out] Integral((c*(d*sec(e + f*x))**p)**n/(sec(e + f*x) + 1), x)/a
```

3.235 $\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{(a+a\sec(e+fx))^2}\,dx$

Optimal. Leaf size=248

$$\frac{2(2-np)\sin(e+fx)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{3a^2f\sqrt{\sin^2(e+fx)}}-\frac{(3-2np)\sin(e+fx)\cos(e+fx)}{}$$

```
[Out] 2/3*(-n*p+2)*hypergeom([1/2, -1/2*n*p],[-1/2*n*p+1],cos(f*x+e)^2)*(c*(d*sec
(f*x+e))^p)^n*sin(f*x+e)/a^2/f/(sin(f*x+e)^2)^(1/2)-1/3*(-2*n*p+3)*cos(f*x+
e)*hypergeom([1/2, -1/2*n*p+1/2],[-1/2*n*p+3/2],cos(f*x+e)^2)*(c*(d*sec(f*x
+e))^p)^n*sin(f*x+e)/a^2/f/(sin(f*x+e)^2)^(1/2)-2/3*(-n*p+2)*(c*(d*sec(f*x+
e))^p)^n*tan(f*x+e)/a^2/f/(1+sec(f*x+e))-1/3*(c*(d*sec(f*x+e))^p)^n*tan(f*x
+e)/f/(a+a*sec(f*x+e))^2
```

Rubi [A] time = 0.45, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {3948, 3817, 4020, 3787, 3772, 2643}

$$\frac{2(2-np)\sin(e+fx)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{3a^2f\sqrt{\sin^2(e+fx)}}-\frac{(3-2np)\sin(e+fx)\cos(e+fx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n/(a + a*Sec[e + f*x])^2,x]
```

```
[Out] (2*(2 - n*p)*Hypergeometric2F1[1/2, -(n*p)/2, (2 - n*p)/2, Cos[e + f*x]^2]*
(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(3*a^2*f*Sqrt[Sin[e + f*x]^2]) - ((3
 - 2*n*p)*Cos[e + f*x]*Hypergeometric2F1[1/2, (1 - n*p)/2, (3 - n*p)/2, Cos
[e + f*x]^2]*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(3*a^2*f*Sqrt[Sin[e + f
*x]^2]) - (2*(2 - n*p)*(c*(d*Sec[e + f*x])^p)^n*Tan[e + f*x])/(3*a^2*f*(1 +
 Sec[e + f*x])) - ((c*(d*Sec[e + f*x])^p)^n*Tan[e + f*x])/(3*f*(a + a*Sec[e
 + f*x])^2)
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 && !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] && !IntegerQ[n]
```

Rule 3787

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_)), x_Symbol] :> Dist[a, Int[(d*Csc[e + f*x])^n, x], x] + Dist[b/d, Int[
(d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, d, e, f, n}, x]
```

Rule 3817

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_)*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (
a_))^(m_), x_Symbol] :> -Simp[(Cot[e + f*x]*(a + b*Csc[e + f*x])^m*(d*Csc[e
```

```
 + f*x])^n)/(f*(2*m + 1)), x] + Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e +
f*x])^(m + 1)*(d*Csc[e + f*x])^n*(a*(2*m + n + 1) - b*(m + n + 1)*Csc[e + f
*x]), x], x] /; FreeQ[{a, b, d, e, f, n}, x] && EqQ[a^2 - b^2, 0] && LtQ[m,
 -1] && (IntegersQ[2*m, 2*n] || IntegerQ[m])
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] &&  !IntegerQ[n]
```

Rule 4020

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_)*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (
a_))^(m_)*(csc[(e_.) + (f_.)*(x_)]*(B_.) + (A_)), x_Symbol] :> -Simp[((A*b
- a*B)*Cot[e + f*x]*(a + b*Csc[e + f*x])^m*(d*Csc[e + f*x])^n)/(b*f*(2*m +
1)), x] - Dist[1/(a^2*(2*m + 1)), Int[(a + b*Csc[e + f*x])^(m + 1)*(d*Csc[e
 + f*x])^n*Simp[b*B*n - a*A*(2*m + n + 1) + (A*b - a*B)*(m + n + 1)*Csc[e +
 f*x], x], x], x] /; FreeQ[{a, b, d, e, f, A, B, n}, x] && NeQ[A*b - a*B, 0
] && EqQ[a^2 - b^2, 0] && LtQ[m, -2^(-1)] &&  !GtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{(a+a\sec(e+fx))^2}\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{(d\sec(e+fx))^{np}}{(a+a\sec(e+fx))^2}\,dx$$

$$= -\frac{\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{3f(a+a\sec(e+fx))^2} - \frac{\left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (}{3a^2}$$

$$= -\frac{2(2-np)\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{3a^2f(1+\sec(e+fx))} - \frac{\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{3f(a+a\sec(e+fx))^2} -$$

$$= -\frac{2(2-np)\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{3a^2f(1+\sec(e+fx))} - \frac{\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{3f(a+a\sec(e+fx))^2} +$$

$$= -\frac{2(2-np)\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{3a^2f(1+\sec(e+fx))} - \frac{\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{3f(a+a\sec(e+fx))^2} +$$

$$= \frac{2(2-np)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n\sin(e+fx)}{3a^2f\sqrt{\sin^2(e+fx)}} -$$

Mathematica [F] time = 10.83, size = 0, normalized size = 0.00

$$\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{(a+a\sec(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n/(a + a*Sec[e + f*x])^2,x]
[Out] Integrate[(c*(d*Sec[e + f*x])^p)^n/(a + a*Sec[e + f*x])^2, x]
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}}{a^{2}\sec\left(fx+e\right)^{2}+2\,a^{2}\sec\left(fx+e\right)+a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(((d*sec(f*x + e))^p*c)^n/(a^2*sec(f*x + e)^2 + 2*a^2*sec(f*x + e)
+ a^2), x)
```

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

$$\int\frac{\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}}{\left(a\sec\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(((d*sec(f*x + e))^p*c)^n/(a*sec(f*x + e) + a)^2, x)
```

maple [F] time = 1.17, size = 0, normalized size = 0.00

$$\int\frac{\left(c\left(d\sec\left(fx+e\right)\right)^{p}\right)^{n}}{\left(a+a\sec\left(fx+e\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e))^2,x)
```

```
[Out] int((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e))^2,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((c*(d*sec(f*x+e))^p)^n/(a+a*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int\frac{\left(c\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{p}\right)^{n}}{\left(a+\frac{a}{\cos\left(e+f\,x\right)}\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n/(a + a/cos(e + f*x))^2,x)
```

```
[Out] int((c*(d/cos(e + f*x))^p)^n/(a + a/cos(e + f*x))^2, x)
```

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

$$\frac{\int \frac{\left(c\left(d\sec\left(e+fx\right)\right)^{p}\right)^{n}}{\sec^{2}\left(e+fx\right)+2\sec\left(e+fx\right)+1}\,dx}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n/(a+a*sec(f*x+e))**2,x)
```

```
[Out] Integral((c*(d*sec(e + f*x))**p)**n/(sec(e + f*x)**2 + 2*sec(e + f*x) + 1),
 x)/a**2
```

3.236 $\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^m\,dx$

Optimal. Leaf size=56

$$(d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n \text{Int}\left((a+b\sec(e+fx))^m(d\sec(e+fx))^{np},x\right)$$

```
[Out] (c*(d*sec(f*x+e))^p)^n*Unintegrable((d*sec(f*x+e))^(n*p)*(a+b*sec(f*x+e))^m
,x)/((d*sec(f*x+e))^(n*p))
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^m\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])^m,x]
```

```
[Out] ((c*(d*Sec[e + f*x])^p)^n*Defer[Int][(d*Sec[e + f*x])^(n*p)*(a + b*Sec[e +
f*x])^m, x])/(d*Sec[e + f*x])^(n*p)
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^m\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}(a+$$

Mathematica [A] time = 2.69, size = 0, normalized size = 0.00

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^m\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])^m,x]
```

```
[Out] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])^m, x]
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n \left(b\sec\left(fx+e\right)+a\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^m,x, algorithm="fricas")
```

```
[Out] integral(((d*sec(f*x + e))^p*c)^n*(b*sec(f*x + e) + a)^m, x)
```

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

$$\int \left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n \left(b\sec\left(fx+e\right)+a\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^m,x, algorithm="giac")
```

```
[Out] integrate(((d*sec(f*x + e))^p*c)^n*(b*sec(f*x + e) + a)^m, x)
```

maple [A] time = 1.45, size = 0, normalized size = 0.00

$$\int \left(c\left(d\sec\left(fx+e\right)\right)^{p}\right)^{n} \left(a+b\sec\left(fx+e\right)\right)^{m} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^m,x)
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^m,x)
```

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

$$\int \left(\left(d\sec\left(fx+e\right)\right)^{p} c\right)^{n} \left(b\sec\left(fx+e\right)+a\right)^{m} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^m,x, algorithm="maxima")
[Out] integrate(((d*sec(f*x + e))^p*c)^n*(b*sec(f*x + e) + a)^m, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \left(c\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{p}\right)^{n} \left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^{m} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x))^m,x)
[Out] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x))^m, x)
```

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

$$\int \left(c\left(d\sec\left(e+fx\right)\right)^{p}\right)^{n} \left(a+b\sec\left(e+fx\right)\right)^{m} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+b*sec(f*x+e))**m,x)
[Out] Integral((c*(d*sec(e + f*x))**p)**n*(a + b*sec(e + f*x))**m, x)
```

3.237 $\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^3\,dx$

Optimal. Leaf size=296

$$-\frac{a\left(a^2(np+1)+3b^2np\right)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+$$

```
[Out] b*(b^2*(n*p+1)+3*a^2*(n*p+2))*hypergeom([1/2, -1/2*n*p],[-1/2*n*p+1],cos(f*
x+e)^2)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/f/n/p/(n*p+2)/(sin(f*x+e)^2)^(1/2
)-a*(3*b^2*n*p+a^2*(n*p+1))*cos(f*x+e)*hypergeom([1/2, -1/2*n*p+1/2],[-1/2*
n*p+3/2],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/f/(-n^2*p^2+1)/(si
n(f*x+e)^2)^(1/2)+a*b^2*(2*n*p+5)*(c*(d*sec(f*x+e))^p)^n*tan(f*x+e)/f/(n*p+
1)/(n*p+2)+b^2*(c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))*tan(f*x+e)/f/(n*p+2)
```

Rubi [A] time = 0.51, antiderivative size = 296, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {3948, 3842, 4047, 3772, 2643, 4046}

$$-\frac{a\left(a^2(np+1)+3b^2np\right)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])^3,x]
```

```
[Out] (b*(b^2*(1 + n*p) + 3*a^2*(2 + n*p))*Hypergeometric2F1[1/2, -(n*p)/2, (2 -
n*p)/2, Cos[e + f*x]^2]*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*n*p*(2 +
n*p)*Sqrt[Sin[e + f*x]^2]) - (a*(3*b^2*n*p + a^2*(1 + n*p))*Cos[e + f*x]*Hy
pergeometric2F1[1/2, (1 - n*p)/2, (3 - n*p)/2, Cos[e + f*x]^2]*(c*(d*Sec[e
+ f*x])^p)^n*Sin[e + f*x])/(f*(1 - n^2*p^2)*Sqrt[Sin[e + f*x]^2]) + (a*b^2*
(5 + 2*n*p)*(c*(d*Sec[e + f*x])^p)^n*Tan[e + f*x])/(f*(1 + n*p)*(2 + n*p))
+ (b^2*(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])*Tan[e + f*x])/(f*(2 +
n*p))
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 && !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] && !IntegerQ[n]
```

Rule 3842

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_)*(csc[(e_.) + (f_.)*(x_)]*(b_.) + (
a_))^(m_), x_Symbol] :> -Simp[(b^2*Cot[e + f*x]*(a + b*Csc[e + f*x])^(m - 2
)*(d*Csc[e + f*x])^n)/(f*(m + n - 1)), x] + Dist[1/(d*(m + n - 1)), Int[(a
+ b*Csc[e + f*x])^(m - 3)*(d*Csc[e + f*x])^n*Simp[a^3*d*(m + n - 1) + a*b^2
*d*n + b*(b^2*d*(m + n - 2) + 3*a^2*d*(m + n - 1))*Csc[e + f*x] + a*b^2*d*(
3*m + 2*n - 4)*Csc[e + f*x]^2, x], x], x] /; FreeQ[{a, b, d, e, f, n}, x] &
& NeQ[a^2 - b^2, 0] && GtQ[m, 2] && (IntegerQ[m] || IntegersQ[2*m, 2*n]) &&
  !(IGtQ[n, 2] && !IntegerQ[m])
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] && !IntegerQ[n]
```

Rule 4046

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(m_.)*(csc[(e_.) + (f_.)*(x_)]^2*(C_.)
+ (A_)), x_Symbol] :> -Simp[(C*Cot[e + f*x]*(b*Csc[e + f*x])^m)/(f*(m + 1))
, x] + Dist[(C*m + A*(m + 1))/(m + 1), Int[(b*Csc[e + f*x])^m, x], x] /; Fr
eeQ[{b, e, f, A, C, m}, x] && NeQ[C*m + A*(m + 1), 0] && !LeQ[m, -1]
```

Rule 4047

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(m_.)*((A_.) + csc[(e_.) + (f_.)*(x_)]*
(B_.) + csc[(e_.) + (f_.)*(x_)]^2*(C_.)), x_Symbol] :> Dist[B/b, Int[(b*Csc
[e + f*x])^(m + 1), x], x] + Int[(b*Csc[e + f*x])^m*(A + C*Csc[e + f*x]^2),
 x] /; FreeQ[{b, e, f, A, B, C, m}, x]
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^3\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}($$

$$= \frac{b^2\left(c(d\sec(e+fx))^p\right)^n(a+b\sec(e+fx))\tan(e+fx)}{f(2+np)} + \frac{\left((d\right.}{}$$

$$= \frac{b^2\left(c(d\sec(e+fx))^p\right)^n(a+b\sec(e+fx))\tan(e+fx)}{f(2+np)} + \frac{\left((d\right.}{}$$

$$= \frac{ab^2(5+2np)\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{f(1+np)(2+np)} + \frac{b^2\left(c(d\sec(e\right.}{}$$

$$= \frac{b\left(b^2(1+np)+3a^2(2+np)\right)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+\right.}{fnp(2+np)\sqrt{\sin^2(e+fx}}$$

$$= \frac{b\left(b^2(1+np)+3a^2(2+np)\right)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+\right.}{fnp(2+np)\sqrt{\sin^2(e+fx}}$$

Mathematica [A] time = 1.31, size = 278, normalized size = 0.94

$$-\frac{\left(-\tan^2(e+fx)\right)^{3/2}\csc^3(e+fx)\left(c(d\sec(e+fx))^p\right)^n\left(a^3\left(n^3p^3+6n^2p^2+11np+6\right)\cos^3(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{np}{2};\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])^3,x]
```

```
[Out] -((Csc[e + f*x]^3*(a^3*(6 + 11*n*p + 6*n^2*p^2 + n^3*p^3)*Cos[e + f*x]^3*Hy
pergeometric2F1[1/2, (n*p)/2, 1 + (n*p)/2, Sec[e + f*x]^2] + b*n*p*(3*a*b*(
3 + 4*n*p + n^2*p^2)*Cos[e + f*x]*Hypergeometric2F1[1/2, 1 + (n*p)/2, 2 + (
```

```
n*p)/2, Sec[e + f*x]^2] + (2 + n*p)*(3*a^2*(3 + n*p)*Cos[e + f*x]^2*Hyperge
ometric2F1[1/2, (1 + n*p)/2, (3 + n*p)/2, Sec[e + f*x]^2] + b^2*(1 + n*p)*H
ypergeometric2F1[1/2, (3 + n*p)/2, (5 + n*p)/2, Sec[e + f*x]^2])))*(c*(d*Se
c[e + f*x])^p)^n*(-Tan[e + f*x]^2)^(3/2))/(f*n*p*(1 + n*p)*(2 + n*p)*(3 + n
*p)))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^3\sec\left(fx+e\right)^3+3\,ab^2\sec\left(fx+e\right)^2+3\,a^2b\sec\left(fx+e\right)+a^3\right)\left(\left(d\sec\left(fx+e\right)\right)^pc\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*sec(f*x + e)^3 + 3*a*b^2*sec(f*x + e)^2 + 3*a^2*b*sec(f*x + e
) + a^3)*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int\left(b\sec\left(fx+e\right)+a\right)^3\left(\left(d\sec\left(fx+e\right)\right)^pc\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^3,x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e) + a)^3*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int\left(c\left(d\sec\left(fx+e\right)\right)^p\right)^n\left(a+b\sec\left(fx+e\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^3,x)
```

```
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^3,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((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int\left(c\left(\frac{d}{\cos\left(e+f\,x\right)}\right)^p\right)^n\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x))^3,x)
```

```
[Out] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x))^3, x)
```

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

$$\int\left(c\left(d\sec\left(e+fx\right)\right)^p\right)^n\left(a+b\sec\left(e+fx\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+b*sec(f*x+e))**3,x)
```

```
[Out] Integral((c*(d*sec(e + f*x))**p)**n*(a + b*sec(e + f*x))**3, x)
```

3.238 $\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^2\,dx$

Optimal. Leaf size=211

$$-\frac{\left(a^2(np+1)+b^2np\right)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+\frac{2a}{}$$

```
[Out] 2*a*b*hypergeom([1/2, -1/2*n*p],[-1/2*n*p+1],cos(f*x+e)^2)*(c*(d*sec(f*x+e)
)^p)^n*sin(f*x+e)/f/n/p/(sin(f*x+e)^2)^(1/2)-(b^2*n*p+a^2*(n*p+1))*cos(f*x+
e)*hypergeom([1/2, -1/2*n*p+1/2],[-1/2*n*p+3/2],cos(f*x+e)^2)*(c*(d*sec(f*x
+e))^p)^n*sin(f*x+e)/f/(-n^2*p^2+1)/(sin(f*x+e)^2)^(1/2)+b^2*(c*(d*sec(f*x+
e))^p)^n*tan(f*x+e)/f/(n*p+1)
```

Rubi [A] time = 0.24, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3948, 3788, 3772, 2643, 4046}

$$-\frac{\left(a^2(np+1)+b^2np\right)\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-np);\frac{1}{2}(3-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{f\left(1-n^2p^2\right)\sqrt{\sin^2(e+fx)}}+\frac{2a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])^2,x]
```

```
[Out] (2*a*b*Hypergeometric2F1[1/2, -(n*p)/2, (2 - n*p)/2, Cos[e + f*x]^2]*(c*(d*
Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*n*p*Sqrt[Sin[e + f*x]^2]) - ((b^2*n*p +
 a^2*(1 + n*p))*Cos[e + f*x]*Hypergeometric2F1[1/2, (1 - n*p)/2, (3 - n*p)/
2, Cos[e + f*x]^2]*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/(f*(1 - n^2*p^2)*
Sqrt[Sin[e + f*x]^2]) + (b^2*(c*(d*Sec[e + f*x])^p)^n*Tan[e + f*x])/(f*(1 +
 n*p))
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 &&  !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] &&  !IntegerQ[n]
```

Rule 3788

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))^2, x_Symbol] :> Dist[(2*a*b)/d, Int[(d*Csc[e + f*x])^(n + 1), x], x]
+ Int[(d*Csc[e + f*x])^n*(a^2 + b^2*Csc[e + f*x]^2), x] /; FreeQ[{a, b, d,
e, f, n}, x]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
```

```
] && !IntegerQ[n]
```

Rule 4046

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(m_.)*(csc[(e_.) + (f_.)*(x_)]^2*(C_.)
+ (A_)), x_Symbol] :> -Simp[(C*Cot[e + f*x]*(b*Csc[e + f*x])^m)/(f*(m + 1))
, x] + Dist[(C*m + A*(m + 1))/(m + 1), Int[(b*Csc[e + f*x])^m, x], x] /; Fr
eeQ[{b, e, f, A, C, m}, x] && NeQ[C*m + A*(m + 1), 0] && !LeQ[m, -1]
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))^2\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}($$

$$= \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}\,($$

$$= \frac{b^2\left(c(d\sec(e+fx))^p\right)^n\tan(e+fx)}{f(1+np)} + \frac{\left(2ab\left(\frac{\cos(e+fx)}{d}\right)^{np}\left(c(d\,s\right.\right.}{}$$

$$= \frac{2ab\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{fnp\sqrt{\sin^2(e+fx)}}$$

$$= \frac{2ab\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{fnp\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.54, size = 200, normalized size = 0.95

$$\frac{\sqrt{-\tan^2(e+fx)}\csc(e+fx)\sec(e+fx)\left(c(d\sec(e+fx))^p\right)^n\left(a^2\left(n^2p^2+3np+2\right)\cos^2(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{np}{2};\frac{np}{2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x])^2,x]
```

```
[Out] (Csc[e + f*x]*(a^2*(2 + 3*n*p + n^2*p^2)*Cos[e + f*x]^2*Hypergeometric2F1[1
/2, (n*p)/2, 1 + (n*p)/2, Sec[e + f*x]^2] + b*n*p*(b*(1 + n*p)*Hypergeometr
ic2F1[1/2, 1 + (n*p)/2, 2 + (n*p)/2, Sec[e + f*x]^2] + 2*a*(2 + n*p)*Cos[e
+ f*x]*Hypergeometric2F1[1/2, (1 + n*p)/2, (3 + n*p)/2, Sec[e + f*x]^2]))*S
ec[e + f*x]*(c*(d*Sec[e + f*x])^p)^n*Sqrt[-Tan[e + f*x]^2])/(f*n*p*(1 + n*p
)*(2 + n*p))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2\sec\left(fx+e\right)^2+2\,ab\sec\left(fx+e\right)+a^2\right)\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*sec(f*x + e)^2 + 2*a*b*sec(f*x + e) + a^2)*((d*sec(f*x + e))^
p*c)^n, x)
```

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

$$\int \left(b\sec\left(fx+e\right)+a\right)^2\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e) + a)^2*((d*sec(f*x + e))^p*c)^n, x)
```

maple [F] time = 1.05, size = 0, normalized size = 0.00

$$\int \left(c \left(d \sec \left(f x +e \right)\right)^{p}\right)^{n} \left(a +b \sec \left(f x +e \right)\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^2,x)
```

```
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^2,x)
```

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

$$\int {\left(b \sec \left(f x + e\right) + a\right)}^{2} \left(\left(d \sec \left(f x + e\right)\right)^{p} c\right)^{n}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] integrate((b*sec(f*x + e) + a)^2*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int {\left(c\,{\left(\frac{d}{\cos\left(e+f\,x\right)}\right)}^p\right)}^n\,{\left(a+\frac{b}{\cos\left(e+f\,x\right)}\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x))^2,x)
```

```
[Out] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x))^2, x)
```

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

$$\int \left(c \left(d \sec{\left(e + f x \right)}\right)^{p}\right)^{n} \left(a + b \sec{\left(e + f x \right)}\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+b*sec(f*x+e))**2,x)
```

```
[Out] Integral((c*(d*sec(e + f*x))**p)**n*(a + b*sec(e + f*x))**2, x)
```

3.239 $\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))\,dx$

Optimal. Leaf size=156

$$\frac{b\sin(e+fx)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{fnp\sqrt{\sin^2(e+fx)}}-\frac{a\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-\right.}{f(1-}$$

```
[Out] b*hypergeom([1/2, -1/2*n*p],[-1/2*n*p+1],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)
^n*sin(f*x+e)/f/n/p/(sin(f*x+e)^2)^(1/2)-a*cos(f*x+e)*hypergeom([1/2, -1/2*
n*p+1/2],[-1/2*n*p+3/2],cos(f*x+e)^2)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/f/(
-n*p+1)/(sin(f*x+e)^2)^(1/2)
```

Rubi **[A]** time = 0.14, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {3948, 3787, 3772, 2643}

$$\frac{b\sin(e+fx)\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n}{fnp\sqrt{\sin^2(e+fx)}}-\frac{a\sin(e+fx)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}(1-\right.}{f(1-}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x]),x]
```

```
[Out] (b*Hypergeometric2F1[1/2, -(n*p)/2, (2 - n*p)/2, Cos[e + f*x]^2]*(c*(d*Sec[
e + f*x])^p)^n*Sin[e + f*x])/(f*n*p*Sqrt[Sin[e + f*x]^2]) - (a*Cos[e + f*x]
*Hypergeometric2F1[1/2, (1 - n*p)/2, (3 - n*p)/2, Cos[e + f*x]^2]*(c*(d*Sec
[e + f*x])^p)^n*Sin[e + f*x])/(f*(1 - n*p)*Sqrt[Sin[e + f*x]^2])
```

Rule 2643

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> Simp[(Cos[c + d*x]*(
b*Sin[c + d*x])^(n + 1)*Hypergeometric2F1[1/2, (n + 1)/2, (n + 3)/2, Sin[c
+ d*x]^2])/(b*d*(n + 1)*Sqrt[Cos[c + d*x]^2]), x] /; FreeQ[{b, c, d, n}, x]
 && !IntegerQ[2*n]
```

Rule 3772

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(b*Csc[c + d*x]
)^(n - 1)*((Sin[c + d*x]/b)^(n - 1)*Int[1/(Sin[c + d*x]/b)^n, x]), x] /; Fr
eeQ[{b, c, d, n}, x] && !IntegerQ[n]
```

Rule 3787

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_)), x_Symbol] :> Dist[a, Int[(d*Csc[e + f*x])^n, x], x] + Dist[b/d, Int[
(d*Csc[e + f*x])^(n + 1), x], x] /; FreeQ[{a, b, d, e, f, n}, x]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] && !IntegerQ[n]
```

Rubi steps

$$\int \left(c(d\sec(e+fx))^p\right)^n (a+b\sec(e+fx))\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}(a+$$

$$= \left(a(d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int (d\sec(e+fx))^{np}\,dx$$

$$= \left(a\left(\frac{\cos(e+fx)}{d}\right)^{np}\left(c(d\sec(e+fx))^p\right)^n\right)\int \left(\frac{\cos(e+fx)}{d}\right)^{-np} dx$$

$$= \frac{b\,{}_2F_1\left(\frac{1}{2},-\frac{np}{2};\frac{1}{2}(2-np);\cos^2(e+fx)\right)\left(c(d\sec(e+fx))^p\right)^n\sin(e}{fnp\sqrt{\sin^2(e+fx)}}$$

Mathematica [A] time = 0.24, size = 125, normalized size = 0.80

$$\frac{\sqrt{-\tan^2(e+fx)}\csc(e+fx)\left(c(d\sec(e+fx))^p\right)^n\left(a(np+1)\cos(e+fx)\,{}_2F_1\left(\frac{1}{2},\frac{np}{2};\frac{np}{2}+1;\sec^2(e+fx)\right)+bnp\,{}_2}{fnp(np+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n*(a + b*Sec[e + f*x]),x]
```

```
[Out] (Csc[e + f*x]*(a*(1 + n*p)*Cos[e + f*x]*Hypergeometric2F1[1/2, (n*p)/2, 1 +
 (n*p)/2, Sec[e + f*x]^2] + b*n*p*Hypergeometric2F1[1/2, (1 + n*p)/2, (3 +
n*p)/2, Sec[e + f*x]^2])*(c*(d*Sec[e + f*x])^p)^n*Sqrt[-Tan[e + f*x]^2])/(f
*n*p*(1 + n*p))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\left(b\sec\left(fx+e\right)+a\right)\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral((b*sec(f*x + e) + a)*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int \left(b\sec\left(fx+e\right)+a\right)\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((b*sec(f*x + e) + a)*((d*sec(f*x + e))^p*c)^n, x)
```

maple [F] time = 1.05, size = 0, normalized size = 0.00

$$\int \left(c\left(d\sec\left(fx+e\right)\right)^p\right)^n\left(a+b\sec\left(fx+e\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e)),x)
```

```
[Out] int((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e)),x)
```

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

$$\int (b\sec (fx+e)+a)\left((d\sec (fx+e))^p c\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n*(a+b*sec(f*x+e)),x, algorithm="maxima")
[Out] integrate((b*sec(f*x + e) + a)*((d*sec(f*x + e))^p*c)^n, x)
```

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

$$\int \left(c\left(\frac{d}{\cos \left(e+f\,x\right)}\right)^p\right)^n \left(a+\frac{b}{\cos \left(e+f\,x\right)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x)),x)
[Out] int((c*(d/cos(e + f*x))^p)^n*(a + b/cos(e + f*x)), x)
```

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

$$\int \left(c\left(d\sec \left(e+fx\right)\right)^p\right)^n \left(a+b\sec \left(e+fx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n*(a+b*sec(f*x+e)),x)
[Out] Integral((c*(d*sec(e + f*x))**p)**n*(a + b*sec(e + f*x)), x)
```

3.240 $\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{a+b\sec(e+fx)}\,dx$

Optimal. Leaf size=206

$$\frac{a\sin(e+fx)\cos(e+fx)\cos^2(e+fx)^{\frac{1}{2}(np-1)}\left(c(d\sec(e+fx))^p\right)^n F_1\left(\frac{1}{2};\frac{1}{2}(np-1),1;\frac{3}{2};\sin^2(e+fx),\frac{a^2\sin^2(e+fx)}{a^2-b^2}\right)}{f\left(a^2-b^2\right)}$$

```
[Out] -b*AppellF1(1/2,1/2*n*p,1,3/2,sin(f*x+e)^2,a^2*sin(f*x+e)^2/(a^2-b^2))*(cos
(f*x+e)^2)^(1/2*n*p)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/(a^2-b^2)/f+a*Appell
F1(1/2,1/2*n*p-1/2,1,3/2,sin(f*x+e)^2,a^2*sin(f*x+e)^2/(a^2-b^2))*cos(f*x+e
)*(cos(f*x+e)^2)^(1/2*n*p-1/2)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/(a^2-b^2)/
f
```

Rubi [A] time = 0.40, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {3948, 3869, 2823, 3189, 429}

$$\frac{a\sin(e+fx)\cos(e+fx)\cos^2(e+fx)^{\frac{1}{2}(np-1)}\left(c(d\sec(e+fx))^p\right)^n F_1\left(\frac{1}{2};\frac{1}{2}(np-1),1;\frac{3}{2};\sin^2(e+fx),\frac{a^2\sin^2(e+fx)}{a^2-b^2}\right)}{f\left(a^2-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n/(a + b*Sec[e + f*x]),x]
```

```
[Out] -((b*AppellF1[1/2, (n*p)/2, 1, 3/2, Sin[e + f*x]^2, (a^2*Sin[e + f*x]^2)/(a
^2 - b^2)]*(Cos[e + f*x]^2)^((n*p)/2)*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x]
)/((a^2 - b^2)*f)) + (a*AppellF1[1/2, (-1 + n*p)/2, 1, 3/2, Sin[e + f*x]^2,
 (a^2*Sin[e + f*x]^2)/(a^2 - b^2)]*Cos[e + f*x]*(Cos[e + f*x]^2)^((-1 + n*p
)/2)*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/((a^2 - b^2)*f)
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 2823

```
Int[((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(
x_)]), x_Symbol] :> Dist[a, Int[(d*Sin[e + f*x])^n/(a^2 - b^2*Sin[e + f*x]^
2), x], x] - Dist[b/d, Int[(d*Sin[e + f*x])^(n + 1)/(a^2 - b^2*Sin[e + f*x]
^2), x], x] /; FreeQ[{a, b, d, e, f, n}, x] && NeQ[a^2 - b^2, 0]
```

Rule 3189

```
Int[((d_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)]^2)^(p_.), x_Symbol] :> With[{ff = FreeFactors[Cos[e + f*x], x]}, -Dist[
(ff*d^(2*IntPart[(m - 1)/2] + 1)*(d*Sin[e + f*x])^(2*FracPart[(m - 1)/2]))/
(f*(Sin[e + f*x]^2)^FracPart[(m - 1)/2]), Subst[Int[(1 - ff^2*x^2)^((m - 1)
/2)*(a + b - b*ff^2*x^2)^p, x], x, Cos[e + f*x]/ff], x]] /; FreeQ[{a, b, d,
 e, f, m, p}, x] && !IntegerQ[m]
```

Rule 3869

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))^(m_.), x_Symbol] :> Dist[Sin[e + f*x]^n*(d*Csc[e + f*x])^n, Int[(b +
```

```
a*Sin[e + f*x])^m/Sin[e + f*x]^(m + n), x], x] /; FreeQ[{a, b, d, e, f, n},
 x] && NeQ[a^2 - b^2, 0] && IntegerQ[m]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] && !IntegerQ[n]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{a+b\sec(e+fx)}\,dx &= \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{(d\sec(e+fx))^{np}}{a+b\sec(e+fx)}\,dx \\
&= \left(\cos^{np}(e+fx)\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{\cos^{1-np}(e+fx)}{b+a\cos(e+fx)}\,dx \\
&= -\left(\left(a\cos^{np}(e+fx)\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{\cos^{2-np}(e+fx)}{b^2-a^2\cos^2(e+fx)}\,dx\right)+\left(b\cos^{np}(\right. \\
&= \frac{\left(b\cos^2(e+fx)^{\frac{np}{2}}\left(c(d\sec(e+fx))^p\right)^n\right)\text{Subst}\left(\int \frac{\left(1-x^2\right)^{-\frac{np}{2}}}{-a^2+b^2+a^2x^2}\,dx,x,\sin(e+fx)\right)}{f} - \\
&= -\frac{bF_1\left(\frac{1}{2};\frac{np}{2},1;\frac{3}{2};\sin^2(e+fx),\frac{a^2\sin^2(e+fx)}{a^2-b^2}\right)\cos^2(e+fx)^{\frac{np}{2}}\left(c(d\sec(e+fx))^p\right)^n \sin}{\left(a^2-b^2\right)f}
\end{aligned}$$

Mathematica [B] time = 25.63, size = 5411, normalized size = 26.27

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n/(a + b*Sec[e + f*x]),x]
[Out] Result too large to show
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n}{b\sec\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e)),x, algorithm="fricas")
[Out] integral(((d*sec(f*x + e))^p*c)^n/(b*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n}{b\sec\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e)),x, algorithm="giac")
[Out] integrate(((d*sec(f*x + e))^p*c)^n/(b*sec(f*x + e) + a), x)
```

maple [F] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{\left(c \left(d \sec \left(f x + e\right)\right)^{p}\right)^{n}}{a + b \sec \left(f x + e\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e)),x)
[Out] int((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e)),x)
```

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

$$\int \frac{\left(\left(d \sec \left(f x + e\right)\right)^{p} c\right)^{n}}{b \sec \left(f x + e\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e)),x, algorithm="maxima")
[Out] integrate(((d*sec(f*x + e))^p*c)^n/(b*sec(f*x + e) + a), x)
```

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

$$\int \frac{\left(c \left(\frac{d}{\cos\left(e+f\,x\right)}\right)^{p}\right)^{n}}{a + \frac{b}{\cos\left(e+f\,x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n/(a + b/cos(e + f*x)),x)
[Out] int((c*(d/cos(e + f*x))^p)^n/(a + b/cos(e + f*x)), x)
```

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

$$\int \frac{\left(c \left(d \sec \left(e + f x\right)\right)^{p}\right)^{n}}{a + b \sec \left(e + f x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n/(a+b*sec(f*x+e)),x)
[Out] Integral((c*(d*sec(e + f*x))**p)**n/(a + b*sec(e + f*x)), x)
```

3.241 $\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{(a+b\sec(e+fx))^2}\,dx$

Optimal. Leaf size=322

$$-\frac{2ab\sin(e+fx)\cos^2(e+fx)^{\frac{np}{2}}\left(c(d\sec(e+fx))^p\right)^n F_1\left(\frac{1}{2};\frac{1}{2}(np-2),2;\frac{3}{2};\sin^2(e+fx),\frac{a^2\sin^2(e+fx)}{a^2-b^2}\right)}{f\left(a^2-b^2\right)^2}+\frac{a^2\sin(e}{}$$

```
[Out] -2*a*b*AppellF1(1/2,1/2*n*p-1,2,3/2,sin(f*x+e)^2,a^2*sin(f*x+e)^2/(a^2-b^2)
)*(cos(f*x+e)^2)^(1/2*n*p)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/(a^2-b^2)^2/f+
a^2*AppellF1(1/2,1/2*n*p-3/2,2,3/2,sin(f*x+e)^2,a^2*sin(f*x+e)^2/(a^2-b^2))
*cos(f*x+e)*(cos(f*x+e)^2)^(1/2*n*p-1/2)*(c*(d*sec(f*x+e))^p)^n*sin(f*x+e)/
(a^2-b^2)^2/f+b^2*AppellF1(1/2,1/2*n*p-1/2,2,3/2,sin(f*x+e)^2,a^2*sin(f*x+e
)^2/(a^2-b^2))*cos(f*x+e)*(cos(f*x+e)^2)^(1/2*n*p-1/2)*(c*(d*sec(f*x+e))^p)
^n*sin(f*x+e)/(a^2-b^2)^2/f
```

Rubi [A] time = 0.56, antiderivative size = 322, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {3948, 3869, 2824, 3189, 429}

$$-\frac{2ab\sin(e+fx)\cos^2(e+fx)^{\frac{np}{2}}\left(c(d\sec(e+fx))^p\right)^n F_1\left(\frac{1}{2};\frac{1}{2}(np-2),2;\frac{3}{2};\sin^2(e+fx),\frac{a^2\sin^2(e+fx)}{a^2-b^2}\right)}{f\left(a^2-b^2\right)^2}+\frac{a^2\sin(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*(d*Sec[e + f*x])^p)^n/(a + b*Sec[e + f*x])^2,x]
```

```
[Out] (-2*a*b*AppellF1[1/2, (-2 + n*p)/2, 2, 3/2, Sin[e + f*x]^2, (a^2*Sin[e + f*
x]^2)/(a^2 - b^2)]*(Cos[e + f*x]^2)^((n*p)/2)*(c*(d*Sec[e + f*x])^p)^n*Sin[
e + f*x])/((a^2 - b^2)^2*f) + (a^2*AppellF1[1/2, (-3 + n*p)/2, 2, 3/2, Sin[
e + f*x]^2, (a^2*Sin[e + f*x]^2)/(a^2 - b^2)]*Cos[e + f*x]*(Cos[e + f*x]^2)
^((-1 + n*p)/2)*(c*(d*Sec[e + f*x])^p)^n*Sin[e + f*x])/((a^2 - b^2)^2*f) +
(b^2*AppellF1[1/2, (-1 + n*p)/2, 2, 3/2, Sin[e + f*x]^2, (a^2*Sin[e + f*x]^
2)/(a^2 - b^2)]*Cos[e + f*x]*(Cos[e + f*x]^2)^((-1 + n*p)/2)*(c*(d*Sec[e +
f*x])^p)^n*Sin[e + f*x])/((a^2 - b^2)^2*f)
```

Rule 429

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[a^p*c^q*x*AppellF1[1/n, -p, -q, 1 + 1/n, -((b*x^n)/a), -((d*x^n)/c)
], x] /; FreeQ[{a, b, c, d, n, p, q}, x] && NeQ[b*c - a*d, 0] && NeQ[n, -1]
 && (IntegerQ[p] || GtQ[a, 0]) && (IntegerQ[q] || GtQ[c, 0])
```

Rule 2824

```
Int[((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(
x_)])^(m_.), x_Symbol] :> Int[ExpandTrig[(d*sin[e + f*x])^n/((a - b*sin[e +
 f*x])^m/(a^2 - b^2*sin[e + f*x]^2)^m), x], x] /; FreeQ[{a, b, d, e, f, n},
 x] && NeQ[a^2 - b^2, 0] && ILtQ[m, -1]
```

Rule 3189

```
Int[((d_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)]^2)^(p_.), x_Symbol] :> With[{ff = FreeFactors[Cos[e + f*x], x]}, -Dist[
(ff*d^(2*IntPart[(m - 1)/2] + 1)*(d*Sin[e + f*x])^(2*FracPart[(m - 1)/2]))/
(f*(Sin[e + f*x]^2)^FracPart[(m - 1)/2]), Subst[Int[(1 - ff^2*x^2)^((m - 1)
/2)*(a + b - b*ff^2*x^2)^p, x], x, Cos[e + f*x]/ff], x]] /; FreeQ[{a, b, d,
```

```
 e, f, m, p}, x] && !IntegerQ[m]
```

Rule 3869

```
Int[(csc[(e_.) + (f_.)*(x_)]*(d_.))^(n_.)*(csc[(e_.) + (f_.)*(x_)]*(b_.) +
(a_))^(m_.), x_Symbol] :> Dist[Sin[e + f*x]^n*(d*Csc[e + f*x])^n, Int[(b +
a*Sin[e + f*x])^m/Sin[e + f*x]^(m + n), x], x] /; FreeQ[{a, b, d, e, f, n},
 x] && NeQ[a^2 - b^2, 0] && IntegerQ[m]
```

Rule 3948

```
Int[((c_.)*((d_.)*sec[(e_.) + (f_.)*(x_)])^(p_))^(n_)*((a_.) + (b_.)*sec[(e
_.) + (f_.)*(x_)])^(m_.), x_Symbol] :> Dist[(c^IntPart[n]*(c*(d*Sec[e + f*x
])^p)^FracPart[n])/(d*Sec[e + f*x])^(p*FracPart[n]), Int[(a + b*Sec[e + f*x
])^m*(d*Sec[e + f*x])^(n*p), x], x] /; FreeQ[{a, b, c, d, e, f, m, n, p}, x
] && !IntegerQ[n]
```

Rubi steps

$$\int \frac{\left(c(d\sec(e+fx))^p\right)^n}{(a+b\sec(e+fx))^2}\,dx = \left((d\sec(e+fx))^{-np}\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{(d\sec(e+fx))^{np}}{(a+b\sec(e+fx))^2}\,dx$$

$$= \left(\cos^{np}(e+fx)\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{\cos^{2-np}(e+fx)}{(b+a\cos(e+fx))^2}\,dx$$

$$= \left(\cos^{np}(e+fx)\left(c(d\sec(e+fx))^p\right)^n\right)\int \left(\frac{b^2\cos^{2-np}(e+fx)}{\left(b^2-a^2\cos^2(e+fx)\right)^2} - \frac{2ab\cos^{3-np}(e+}{\left(b^2-a^2\cos^2(e+\right.}\right.$$

$$= \left(a^2\cos^{np}(e+fx)\left(c(d\sec(e+fx))^p\right)^n\right)\int \frac{\cos^{4-np}(e+fx)}{\left(-b^2+a^2\cos^2(e+fx)\right)^2}\,dx - \left(2ab\cos^{np}\right.$$

$$= -\frac{\left(2ab\cos^2(e+fx)^{\frac{np}{2}}\left(c(d\sec(e+fx))^p\right)^n\right)\mathrm{Subst}\left(\int \frac{\left(1-x^2\right)^{\frac{1}{2}(2-np)}}{\left(-a^2+b^2+a^2x^2\right)^2}\,dx, x, \sin(e+fx)\right.}{f}$$

$$= -\frac{2abF_1\left(\frac{1}{2};\frac{1}{2}(-2+np),2;\frac{3}{2};\sin^2(e+fx),\frac{a^2\sin^2(e+fx)}{a^2-b^2}\right)\cos^2(e+fx)^{\frac{np}{2}}\left(c(d\sec(e+f\right.}{\left(a^2-b^2\right)^2 f}$$

Mathematica [B] time = 45.37, size = 14108, normalized size = 43.81

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c*(d*Sec[e + f*x])^p)^n/(a + b*Sec[e + f*x])^2,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(\left(d\sec\left(fx+e\right)\right)^p c\right)^n}{b^2\sec\left(fx+e\right)^2+2\,ab\sec\left(fx+e\right)+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(((d*sec(f*x + e))^p*c)^n/(b^2*sec(f*x + e)^2 + 2*a*b*sec(f*x + e)
+ a^2), x)
```

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

$$\int \frac{\left(\left(d\sec\left(fx+e\right)\right)^{p}c\right)^{n}}{\left(b\sec\left(fx+e\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(((d*sec(f*x + e))^p*c)^n/(b*sec(f*x + e) + a)^2, x)
```

maple [F] time = 1.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c\left(d\sec\left(fx+e\right)\right)^{p}\right)^{n}}{\left(a+b\sec\left(fx+e\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e))^2,x)
```

```
[Out] int((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e))^2,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((c*(d*sec(f*x+e))^p)^n/(a+b*sec(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\left(c\left(\frac{d}{\cos\left(e+fx\right)}\right)^{p}\right)^{n}}{\left(a+\frac{b}{\cos\left(e+fx\right)}\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*(d/cos(e + f*x))^p)^n/(a + b/cos(e + f*x))^2,x)
```

```
[Out] int((c*(d/cos(e + f*x))^p)^n/(a + b/cos(e + f*x))^2, x)
```

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

$$\int \frac{\left(c\left(d\sec\left(e+fx\right)\right)^{p}\right)^{n}}{\left(a+b\sec\left(e+fx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*(d*sec(f*x+e))**p)**n/(a+b*sec(f*x+e))**2,x)
```

```
[Out] Integral((c*(d*sec(e + f*x))**p)**n/(a + b*sec(e + f*x))**2, 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"
```